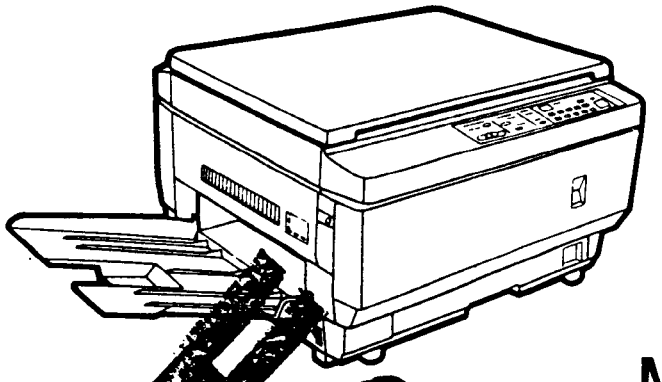
SHARP SERVICE MANUAL

CODE: 00ZSF7350SM-E



SF-7300
MODEL SF-7350

FREE MANUAL
MASTER COPY

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SHARP CORPORATION

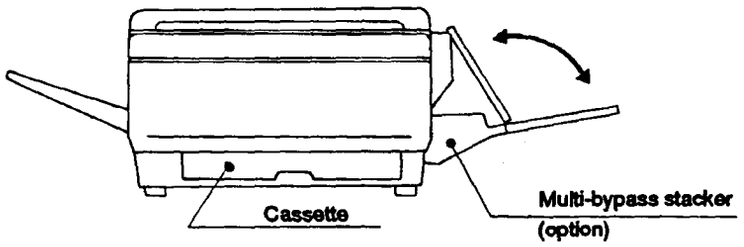
FEATURES

- The SF-7350 is a successor to the SF-7200.
  The following shows the comparison of the SF-7350 features vs. SF-7200.

  The SF-7300 is the SF-7350 without the variable magnification feature.

Item \ Model	SF-7350	SF-7200
Document table	Stationary table	Moving table
Cassette loading	Front loading	Front loading
Copy speed (A4, x1.0)	13 copies/minute	12 copies/minute
Magnification feature	2R + 1E B4 → A4 B4 → B5 A4 → B4 8-1/2"x14" → 8-1/2"x11" 8-1/2"x11" → 8-1/2"x5-1/2" 5-1/2"x8-1/2" → 8-1/2"x11"	2R + 2E B4 → A4 B4 → B5 A4 → B4 B5 → B4 8-1/2"x14" → 8-1/2"x11" 8-1/2"x11" → 8-1/2"x5-1/2" 5-1/2"x8-1/2" → 8-1/2"x11" 1:2
Multi-bypass stacker	Available as an option	Not available
Maintenance cycle	30,000 copies	12,000 copies
Drum life	30,000 copies	12,000 copies
Developer life	30,000 copies	6,000 copies

SF-7350/SF-7300



Options

SF-7350	SF-7300
SF-MF11 (Multi-bypass stacker)	←
SF-730UA (Universal cassette inch series)	←
SF-730UB (Universal cassette AB series)	←
SF-720DII (Machine desk)	←
SF-71A/71B (Personal counter)	←

[1] BASIC SPECIFICATIONS

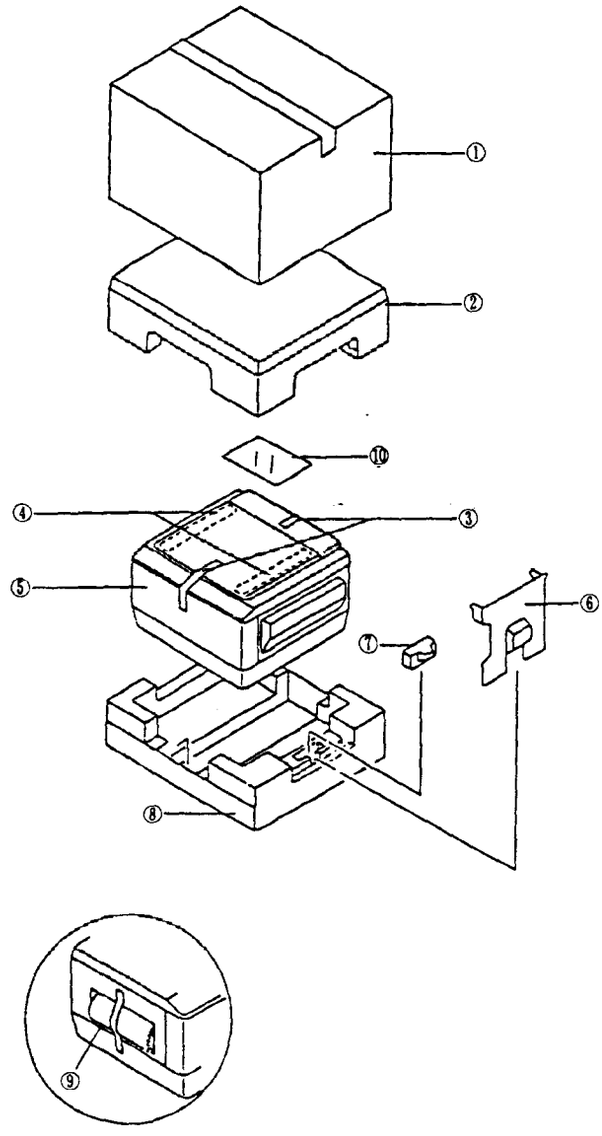
<table>
<tr><th></th><th>SF-7350</th><th>SF-7300</th></tr>
<tr><td>Type:</td><td>Desktop</td><td>←</td></tr>
<tr><td>Copying system:</td><td>Dry-type electrostatic plain paper copier</td><td>←</td></tr>
<tr><td>Kinds of originals:</td><td>Sheet, book</td><td>←</td></tr>
<tr><td>Original size:</td><td>10" x 14" (B4), maximum</td><td>←</td></tr>
<tr><td>Copy size:</td><td>10" x 14" (B4) to 8-1/2" x 5-1/2" (A6)</td><td>←</td></tr>
<tr><td>*Copy speed:</td><td>Cassette feed
<table><tr><th></th><th>N</th><th>R</th><th>E</th></tr><tr><td>B4 (8-1/2"x14")</td><td>11 CPM</td><td>12 CPM</td><td>10 CPM</td></tr><tr><td>A4 (8-1/2"x11")</td><td>13 CPM</td><td>12 CPM</td><td>10 CPM</td></tr><tr><td>B5 (8-1/2"x5-1/2")</td><td>13 CPM</td><td>12 CPM</td><td>10 CPM</td></tr></table>Multi-bypass stacker (option)
<table><tr><th></th><th>N</th><th>R</th><th>E</th></tr><tr><td>B4 (8-1/2"x14")</td><td>11 CPM</td><td>11 CPM</td><td>10 CPM</td></tr><tr><td>A4 (8-1/2"x11")</td><td>12 CPM</td><td>12 CPM</td><td>10 CPM</td></tr><tr><td>B5 (8-1/2"x5-1/2")</td><td>12 CPM</td><td>12 CPM</td><td>10 CPM</td></tr></table>N: Normal, R: Reduction, E: Enlargement</td><td>(Normal copy only)</td></tr>
<tr><td>First copy:</td><td>8 seconds, maximum</td><td>←</td></tr>
<tr><td>Warm up time:</td><td>45 seconds, maximum (at rated voltage and room temperature of 68 degrees Fahrenheit (20 degrees centigrade), and relative humidity of 65%.)</td><td>←</td></tr>
<tr><td>Multicopying:</td><td>1 to 99 copies, 10 key input, countdown type, with auto repeat.</td><td>←</td></tr>
<tr><td>Magnification ratio:</td><td><table><tr><td>Normal</td><td>1:1 ± 1%</td></tr><tr><td>Reduction</td><td>Reduction ratio ± 1%</td></tr><tr><td>Enlargement</td><td>Enlargement ratio ± 1%</td></tr></table><table><tr><th>AB series</th><th>Inch series</th></tr><tr><td>1:0.7, 1:0.8, 1:1, 1:1.24</td><td>1:0.64, 1:0.75, 1:1, 1:1.24</td></tr></table></td><td>←
—
—
(Normal copy only)</td></tr>
<tr><td>Paper feed system:</td><td>Cassette automatic feed (approx. 250 sheets) and single manual feed.
Multi-bypass stacker (option)(approx. 50 sheets).</td><td>←</td></tr>
<tr><td>Exposure system:</td><td>Slit exposure with stationary platen and moving light source, variable light source illumination.</td><td>←</td></tr>
<tr><td>Developing system:</td><td>Two component magnetic brush development (positively charged toner and negatively charge carrier).</td><td>←</td></tr>
<tr><td>Toner supply:</td><td>Automatic toner control system, with magnetic sensor.</td><td>←</td></tr>
<tr><td>Photoconductor:</td><td>OPC drum (50ϕ)</td><td>←</td></tr>
<tr><td>Paper separation system:</td><td>Separation with the remover tape and separation roller.</td><td>←</td></tr>
<tr><td>Cleaning system:</td><td>Blade cleaning of the drum.</td><td>←</td></tr>
<tr><td>Original alignment:</td><td>Front frame, left side aligned.</td><td>←</td></tr>
<tr><td>Charge system:</td><td>Negative DC corona.</td><td>←</td></tr>
<tr><td>Transfer system:</td><td>Negative DC corona.</td><td>←</td></tr>
<tr><td>Discharge system:</td><td>Drum: optical discharge by mean of a discharge lamp.
Copy paper: discharge by means of discharge brush.</td><td>←</td></tr>
<tr><td>Light source:</td><td>Halogen lamp.</td><td>←</td></tr>
<tr><td>Power requirements:</td><td>100/110VAC, 50/60Hz.
120VAC, 60Hz
200VAC, 60Hz
220VAC, 50/60Hz
240VAC, 50Hz</td><td>←
←
←
←
←</td></tr>
<tr><td>Power consumption:</td><td>1350W, max., operating and 150w/h average during standby and ready (20–25°C)</td><td>←</td></tr>
<tr><td>Fusing system:</td><td>Heat roller type.
Upper heat roller: Teflon coated
Lower heat roller: silicon</td><td>←
←
←</td></tr>
<tr><td>Physical dimensions:</td><td>577mm (22.7") wide x 530mm (20.8") deep x 340mm (13.3") high
917mm (36.1") wide x 530mm (20.8") deep x 340mm (13.3") high with the multi-bypass stacker in use.</td><td>←
←</td></tr>
<tr><td>Weight:</td><td>Approximately 34.5Kg (98.9 lbs) with drum and developer.</td><td>33.5kg (96 lbs)</td></tr>
</table>

An arrow mark "←" in the SF-7300 column shows that the description is the same as that of the SF-7350 and a dash "—" indicates that the description does not apply to the SF-7300.

* The copy speed from the multi-bypass stacker is lower than the cassette feed because paper feed distance is longer.

[2] UNPACKING AND INSTALLATION

1. Unpacking



	Part names
1	Packing case
2	Packing cushion
3	PP tape x2
4	Original cover protective material x2
5	Copier
6	Paper receive tray in poly bag
7	Waste toner container
8	Bottom case assy
9	AC cord sleeve
10	Instruction manual

2. Installation

Installation requirements:

Please note the following requirements when installing the copier.

(1) Machine Environment

1) Avoid installation in direct sunlight or bright locations near a w dow.

Direct sunlight may cause the plastic components and the origir cover to deform. Frosted glass may also produce the same effect.

2) Avoid installation in a hot, damp area or where rapid changes humidity occur (for example; near an air conditioner).

This may cause paper to dampen or moisture to collect insi the copier, leading to misfeeds and a deterioration in co quality.

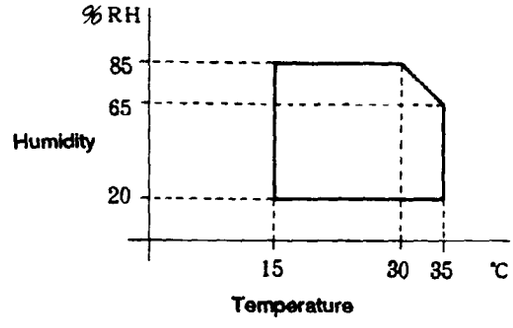
The recommended environmental conditions are:

20 to 25 degrees C (68 to 77 degrees F.), 65±5%RH.

The nominal environment conditions are:

15 to 30 degrees C. (59 to 86 degrees F.), 20 to 85%RH.

If the copier is to be installed in an area of higher temperatur the humidity must be lower. Example; If the temperature is 3 degrees C. (95 degrees F), the humidity should be 65%.



3) Avoid installation in a place where dust or vibration is encountered.

Dust deposits inside of the copier may lead to a deterioration of copy quality or machine trouble.

4) Do not install the copier on an unstable or uneven surface. The copier must be placed on a level surface to permit proper operation.

5) Avoid installation in a place where the ventilation or air circulation is poor.

6) Never install the copier near flammable materials or in the presence of ammonia fumes.

Installation near a diazo copy machine may lead to a deterioration of copy quality or a machine malfunction.

7) Install the copier near the wall outlet, do not use an extension cord.

(2) Space around the copier

The copier requires at least 10cm (4") of clearance between the rear side and the wall. This space is required for proper cooling fan ventilation. Adequate working space around the machine should also be allowed for ease of operation and service.

(3) Copier table

Install the machine on a level surface. Place a water level (UKOGM0054CSZZ) in the center of the original glass and check level front to rear and side to side.

NOTE: The toner density and copy quality may be affected unless the machine is installed on a level surface.

(4) Power source

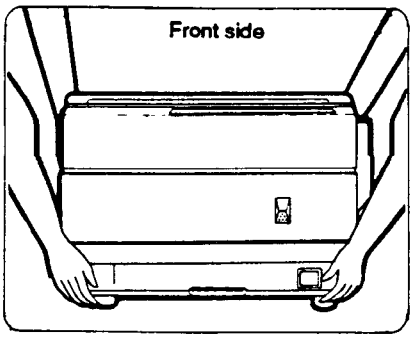
1) The power supply line should have a capacity of more than 15A, capable of supplying more than 90% of the rated voltage at full load.
2) Do not use an extension cord or operate any other equipment from the same wall outlet.

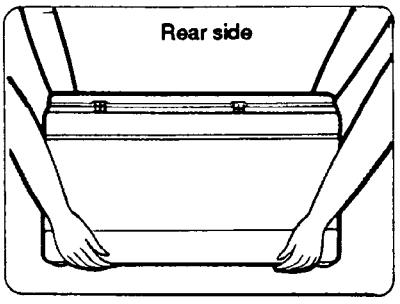
(5) Ground connection

1) Use a properly grounded (three prong) wall outlet that meets all national and local electrical code specifications.

How the copier machine is carried

When moving the copier, remove the receiving tray and carry it by holding the identation in the bottom of the machine.

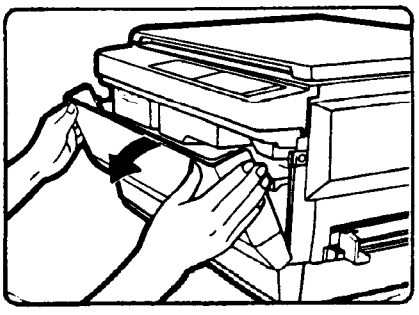




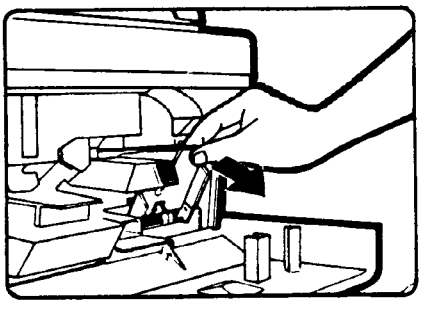
3. Releasing locks and installing supplies

A. Removing the developer unit

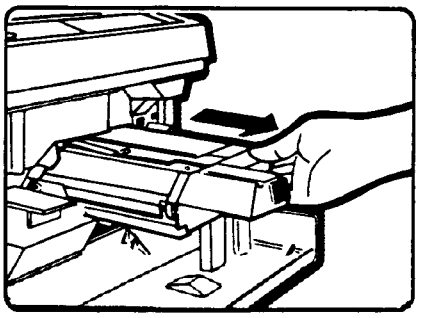
(1) Open the front panel.



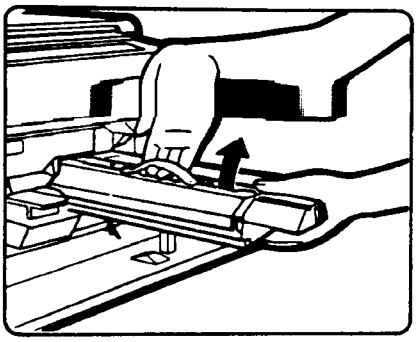
(2) Pull the developer unit lever towards you.



(3) Gently pull out the developer unit by holding the handle until it stops.



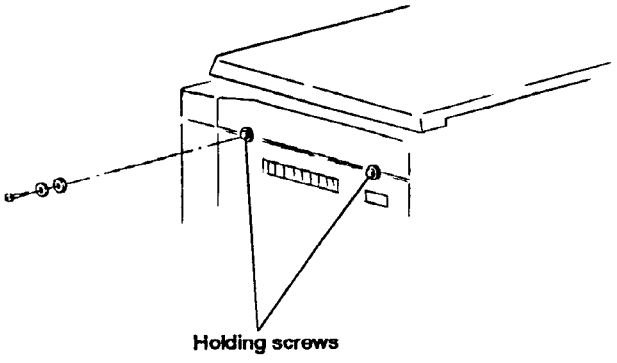
(4) Hold the carry handle of the developer unit and remove it.



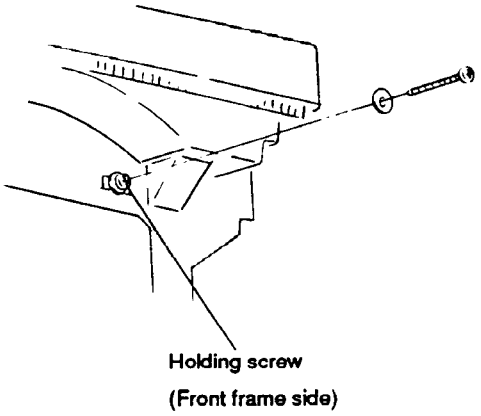
NOTE: Unless the developer unit is held by the handle, the developer unit may not come out.

B. Releasing the optical block lock

(1) Remove mirror base unit (No. 2/3) holding screws.

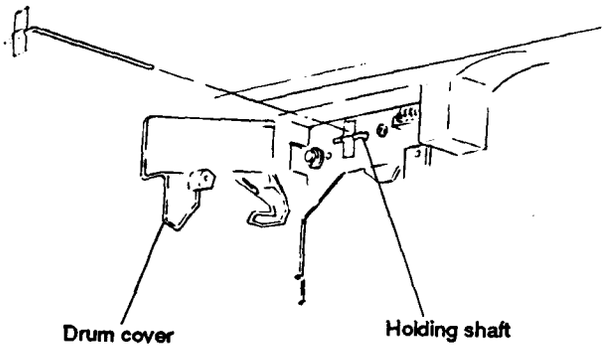


(2) Remove mirror base (No.4/5) holding screw (SF-7350 only).



(3) Removal of the lens base holding shaft (SF-7350 only).

a. Remove the tape, then the lens base holding shaft.



C-1. Installing the drum

(In some of the machines, depending on location, the drum has already been installed at the factory. Execute C-2 if the drum was installed in the copier.)

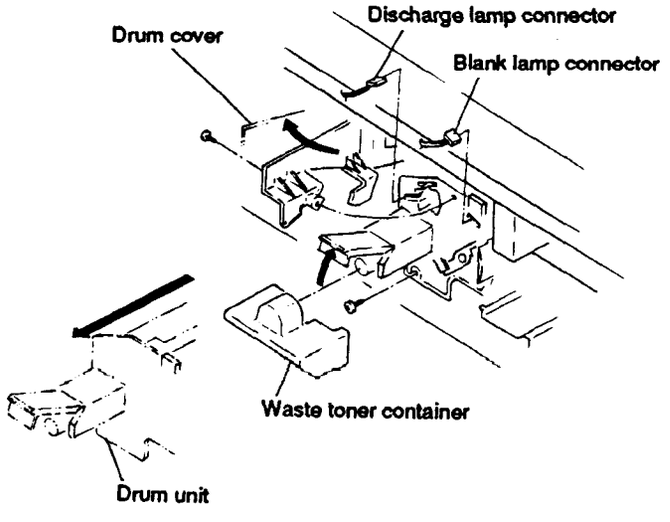
(Machines without drum installed)

(1) Push the frame open lever to open the clam shell mechanism.

(2) Lift up the lever to remove the waste toner container.

(3) Open the drum cover (one screw).

(4) Unfasten two connectors and one screw, and remove the drum unit.



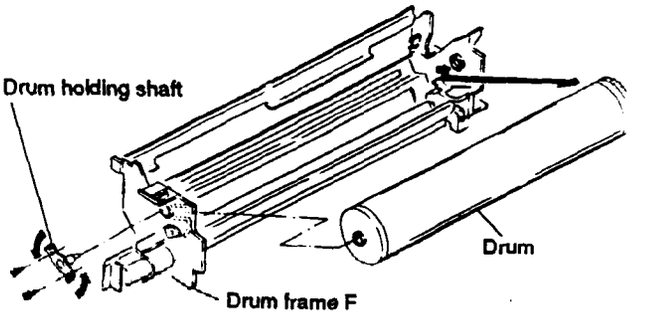
(5) Remove the drum holding shaft from the frame F.

Remove two screws to remove the drum and rotate the sh counterclockwise to remove it.

(6) Remove the drum protective sheet and mount the drum the drum frame without touching the drum surface with yc fingers.

NOTE: Do not remove setting powder from the drum blade. Use care when handling the drum to avc scratching the surface.

(7) Install the drum holding shaft to the frame F.



(8) Fasten two connectors.

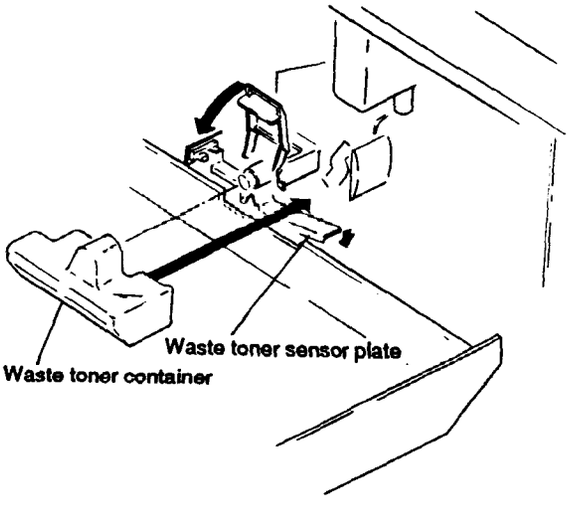
Close the drum cover.

Secure the drum unit with two screws.

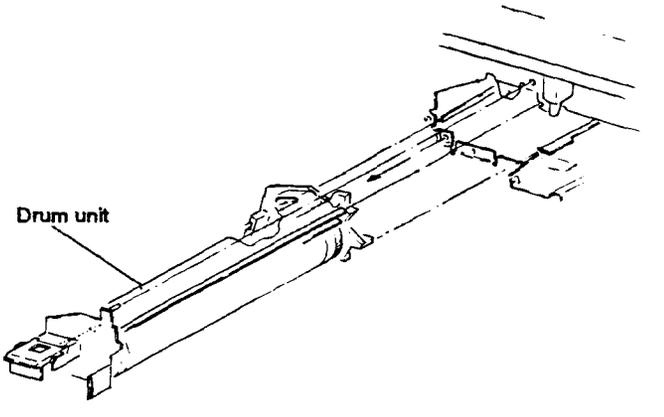
If the discharge lamp connector was not connected, the trouble status code "P2" will be displayed when the power is turned on.

(9) Close the unit.

Hold the waste toner container sensor plate down, and instal the waste toner container.



(10) Install the drum unit along the guide in the copier.

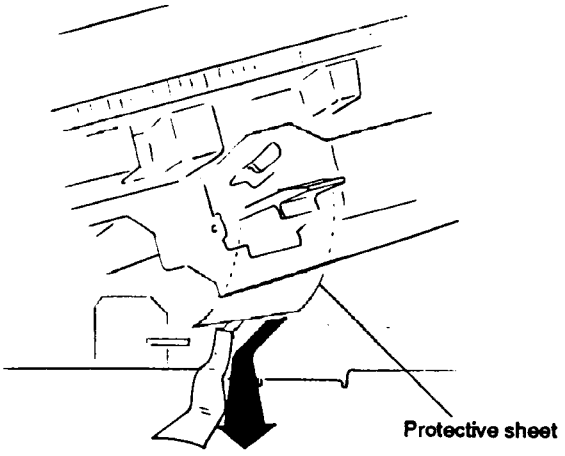


C-2. Remove the drum protect sheet

(Machine with drum installed)

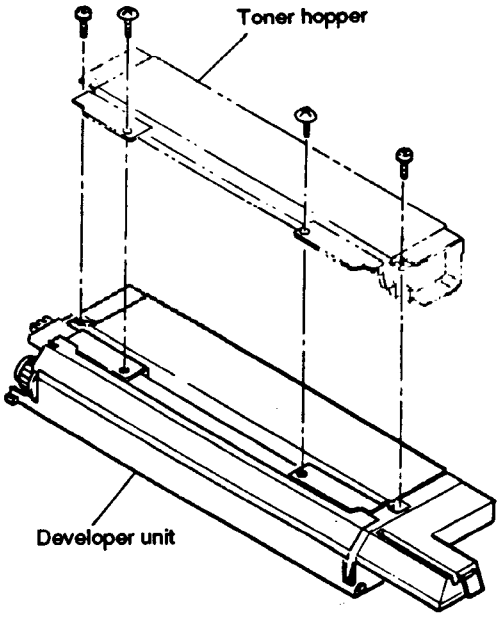
(1) Push down on the frame open lever to open the clam shell mechanism.

(2) Gently remove the drum protect sheet.



D. Installing developer

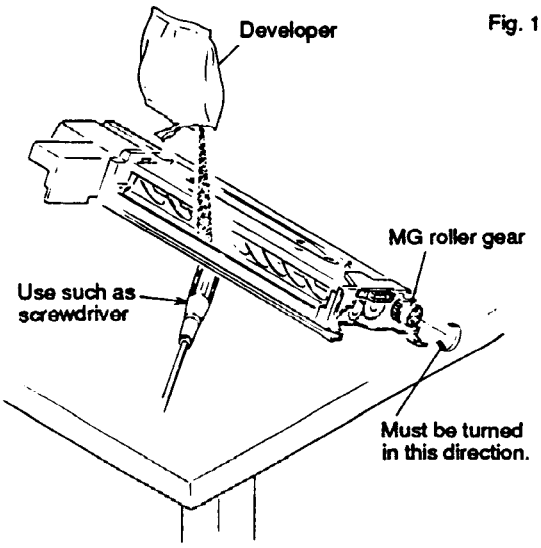
(1) Remove the toner hopper from the developer unit (four screws).



(2) Place a screwdriver handle under the bottom of the developer unit and tilt the developer unit as whown in fig. 1.

(3) Load a full bag of developer into the developer unit while rotating the MG roller gear in the arrow direction.

Fig. 1



IMPORTANT: It is important that the MG roller gear be turned in the arrow direction, otherwise, developer may leak under the MG roller.

(4) Install the toner hopper on the developer unit.

Do not install the developer unit in the machine at this time.

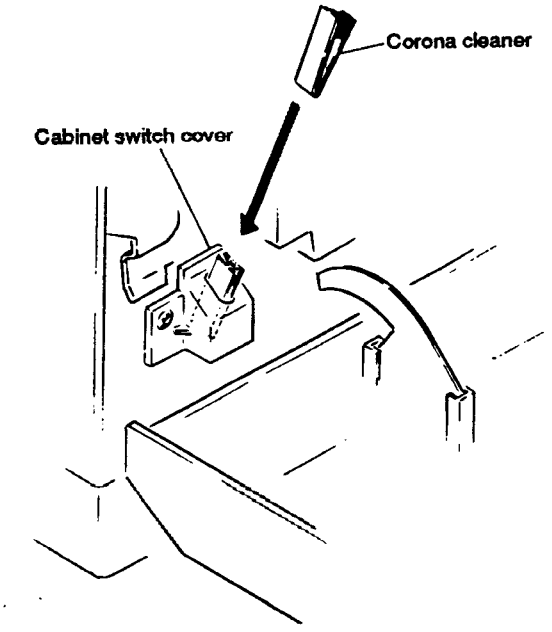
E. Toner control sensor (TCS) level adjustment

(1) Make sure that the developer unit is not installed in the copier.

(2) Turn power on.

(3) Turn on the cabinet switch (CSW) using the corona cleaner.

(The trouble status "CH" will flash.)



(4) Execute test command 25 but do not push the PRINT switch.

C → % → % → C → 2 → 5

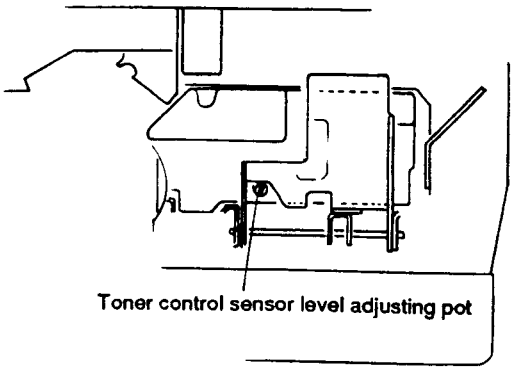
(5) Install the developer unit in the copier.

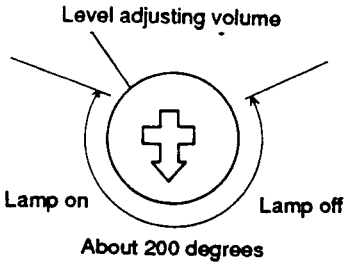
(6) Push the PRINT switch.

Test command 25 starts and stirs the developer for a period of three minutes.

(7) Push the PRINT switch again after the developer has completed stirring.

Turn the toner control sensor level adjusting pot clockwise until the TPL lamp turns ON.





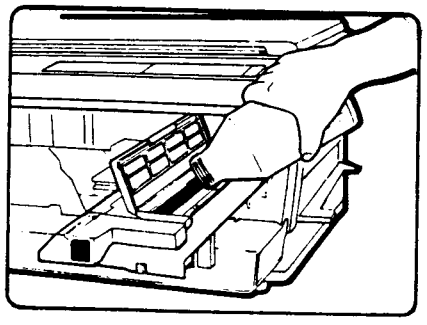
NOTE: Do not rotate the pot more than 200 degrees or it will be damaged.

(8) Slowly turn pot counter clockwise and stop when the toner lamp (TPL) just goes out.

NOTE: Turning on the power with toner in the toner hopper and the toner sensor not adjusted may affect the toner concentration. To achieve proper toner level the above procedure to set up the TCS level must be performed starting with step E.

F. Installing toner

(1) Load toner in the toner hopper after the completion of the toner control sensor (TCS) level adjustment.



G. Confirming the model type and local mode program

(Check method)

(1) Execute test command 79.

(2) When this test command is executed, the model type and the local mode setup data currently stored in the memory (see the table below) are displayed, and the READY lamp turns on.

(3) You will now enter a two-digit number shown in the table after the READY lamp turns ON. The number must match the model type and the local mode setting.

Push the PRINT switch to store the number in the memory.

The READY lamp goes out after the number is stored.

(4) Push the CLEAR key twice to terminate the test command 79.

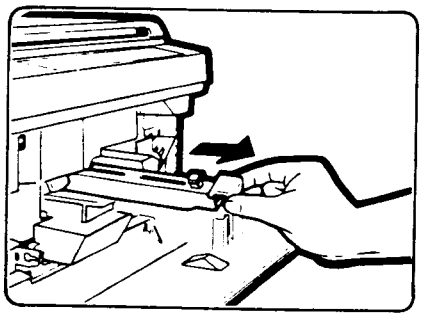
Local mode number	Model type	Local standards	
00	SF-7300	Japan	
02		Export	AB series
03			Inch series
04	SF-7350	Japan	
06		Export	AB series
07			Inch series

H. Corona wire cleaning

a. Main corona

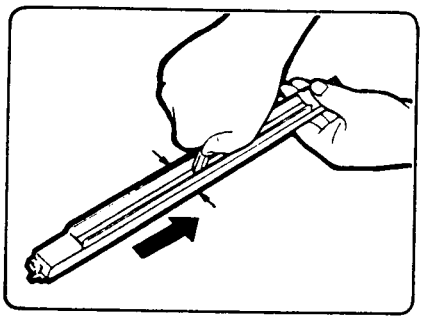
(1) Turn the main power OFF.

(2) Open the front cover and pull the main corona unit slowly out.



(3) Hold the corona wire between the tips of the corona cleaner, and wipe the wire moving the cleaner in the direction indicated on the corona handle.

- Put a little alcohol on the cleaner if the corona wire is particularly dirty.
- Do not bend or pull the wire.

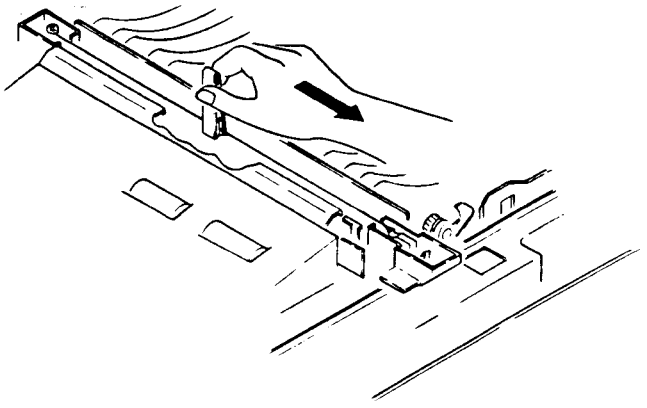


(4) Push the main corona unit back into place and closes the front cover.

b. Transfer corona

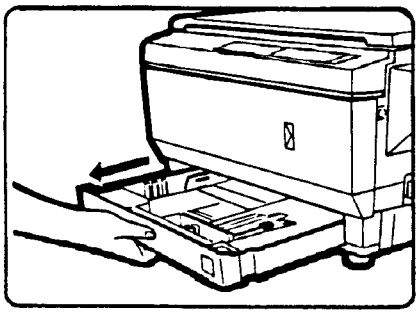
(1) Push down on the frame open lever to open the clam shell mechanism.

(2) With the transfer corona unit still installed, clean the transfer corona wire with the provided cleaner.



I. Removing the cassette protective tape

(1) Take out the cassette and remove the protective tape.



4. Copy check

Copy check is required at every maintenance call.

(1) Image skew

1.5mm, maximum

(2) Void area and image loss

Make a copy in the normal mode and check to see that the void area and the image loss are within the given limits.

Side margin void area	5 to 8mm
Lead edge image loss	2.5±1.5mm
Side margin image loss	3.3 to 9.7mm

(3) Copy density

1) Manual exposure

(1) Place the test chart (UKOG-0089CSZZ) or KODAK gray scale on the original table.

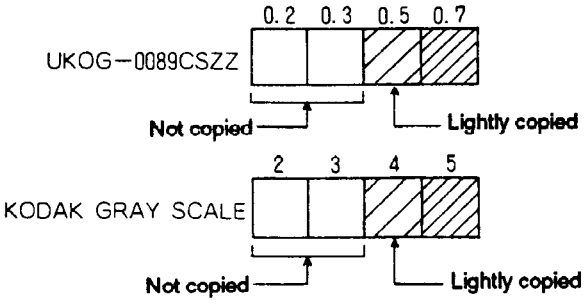
(2) Set the machine in the manual exposure mode using the exposure mode select key.

The copy density indicator turns off.

Set the exposure control knob to 1.0 (light).

(3) Make a copy in the normal mode and check the copy density.

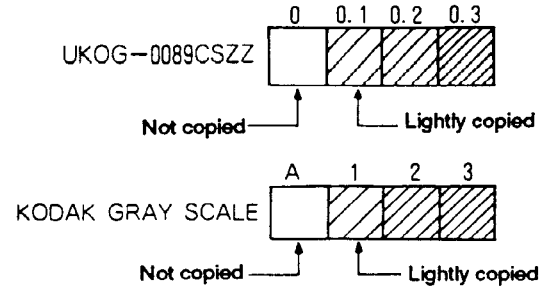
Basic copy density (manual exposure at 1.0 (light))



(4) Set the exposure control to 5.0 (dark).

(5) Make a copy in the normal mode and check the copy density.

Basic copy density (manual exposure at 5.0 (dark))

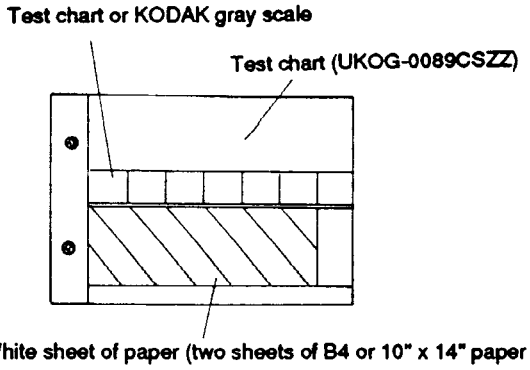


2) Auto exposure

(1) Place a test chart on the original table

Place four sheets of blank white paper, 120mm x 360mm, on top of each other and place the test chart (UKOG-0089CSZZ) or

KODAK gray scale beside or on it, so that the gray scale portion of the test chart is copied.


Test chart or KODAK gray scale
Test chart (UKOG-0089CSZZ)
White sheet of paper (two sheets of B4 or 10" x 14" paper folded double)

(2) Setting in the auto exposure mode

Set the machine in the auto exposure mode using the exposure select key.

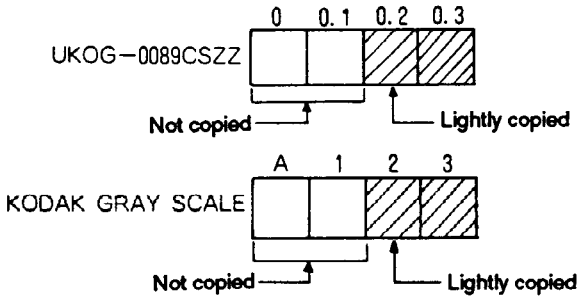
(3) Open the front panel.

Set the AE correction switch to the position N.

Auto exposure (AE) correction switch

(4) Make a copy in the normal mode and check the copy density.

Basic copy density (auto exposure)



If the copy density is not within the limits, refer to the procedure described in "[11] Copy density adjustment".

(4) Resolution

Make one copy in the enlarge mode (x1.4), normal mode (x1.0), and reduce modes (x0.8, x0.7 or x0.75, x0.64).

Check to see that resolution is within the limits below.

	Center of copy	Corner of copy
Normal mode (100%)	5.0 lines/mm	4.5 lines/mm
Enlarge mode (124%)	5.0 lines/mm	4.5 lines/mm
Reduce mode (80%, 75%)	4.0 lines/mm	3.6 lines/mm
Reduce mode (70%, 64%)	4.0 lines/mm	3.6 lines/mm

Where half of lines on the test chart can be seen is the resolution of the copy.

[3] SUPPLIES

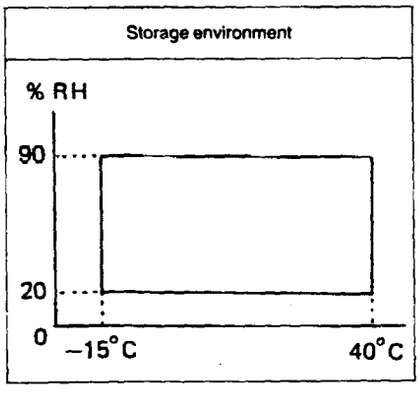
Name		Contents	Life	Item name
Drum unit		OPC drum x1 Remover tape x1 Blade x1	30K	SF-730DR
Developer	(Black)	Developer (400g) x1	30K	SF-730DV1
	(Red)		5K	SF-730DV2
	(Blue)			SF-730DV3
	(Brown)			SF-730DV4
	(Green)			SF-730DV5
Toner	(Black)	Toner (260g) x1	5K	SF-730T1
	(Red)	Toner (130g) x1	2.5K	SF-730T2
	(Blue)			SF-730T3
	(Brown)			SF-730T4
	(Green)			SF-730T5
Color developer kit	(Red)	Developer (400g) x1 Toner (130g) x1 Developer unit x1 Case x 1	—	SF-730K2
	(Blue)			SF-730K3
	(Brown)			SF-730K4
	(Green)			SF-730K5
Heat roller kit		Teflon roller (upper) x1 Silicone roller (lower) x1 Separator pawl x3 Cleaning roller x1	60K	SF-730HR

Toner life: For 6% toned document of A4 or letter size.

Drum, developer, and toner storage period and conditions

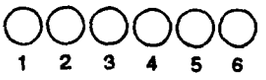
Storage period: 24 months after the data of manufacture, providing that the seal is not opened.

Storage conditions: 20 to 90%RH, —15 to 40 degrees centigrade



How to read the lot number

• Drum



1: Sensitivity

2: Model ("H" for SF-7300/7350)

3: Year

4: Month

5,6: Lot number

• Developer or toner

1: B → Toner
W → Developer

2,3: Month

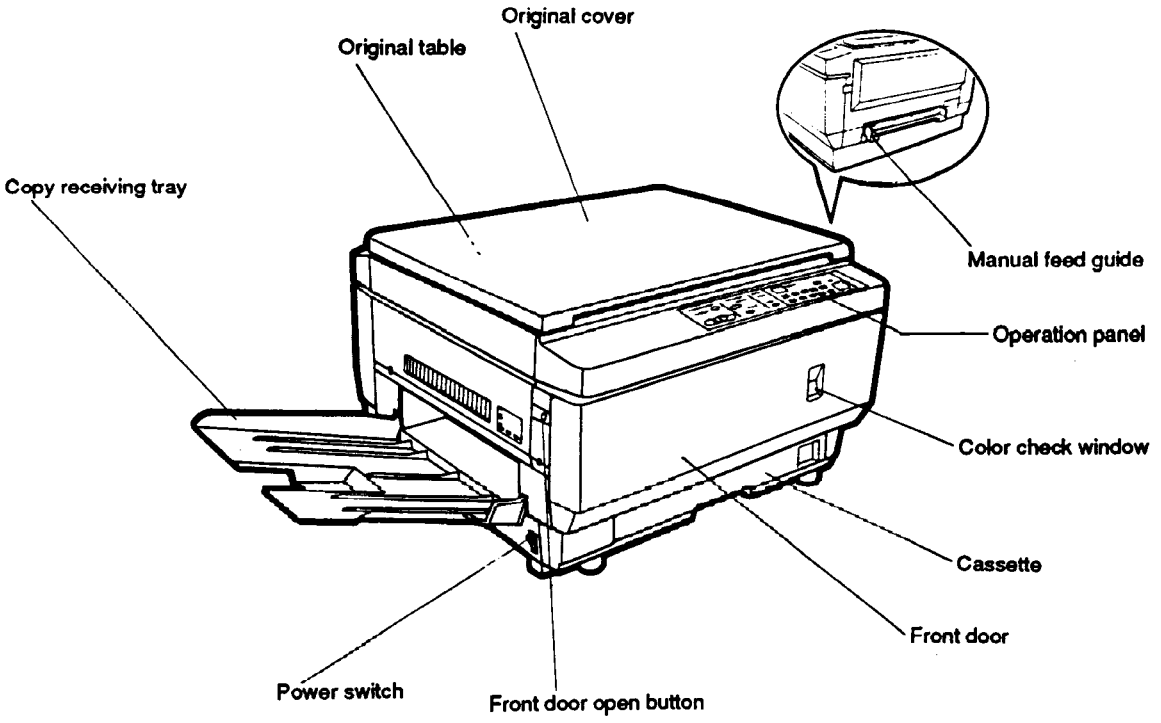
4,5: Day

6: Year

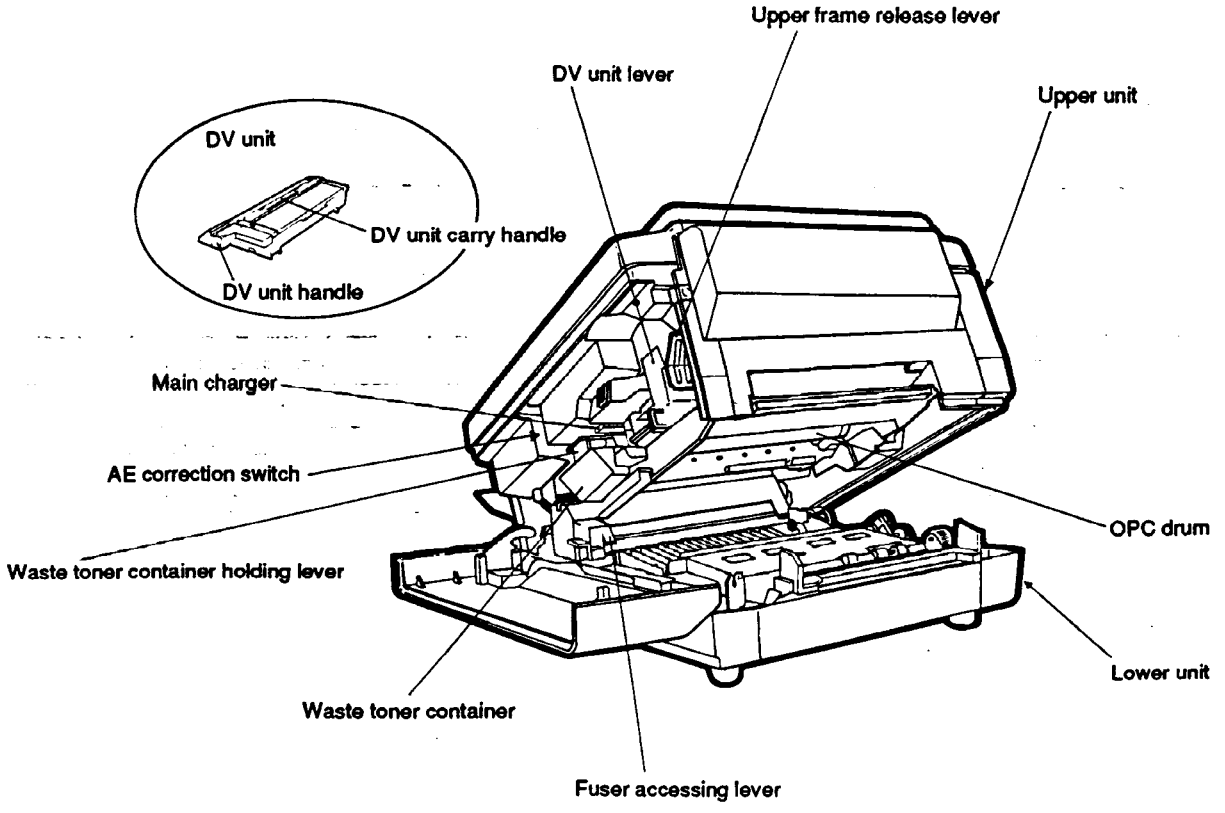
7: Lot number

[4] EXTERNAL AND INTERNAL STRUCTURES

1. External parts

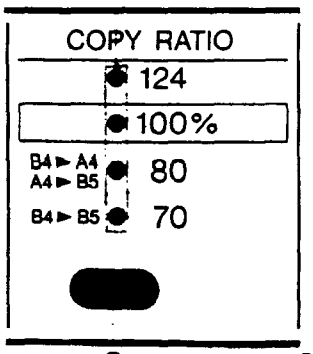


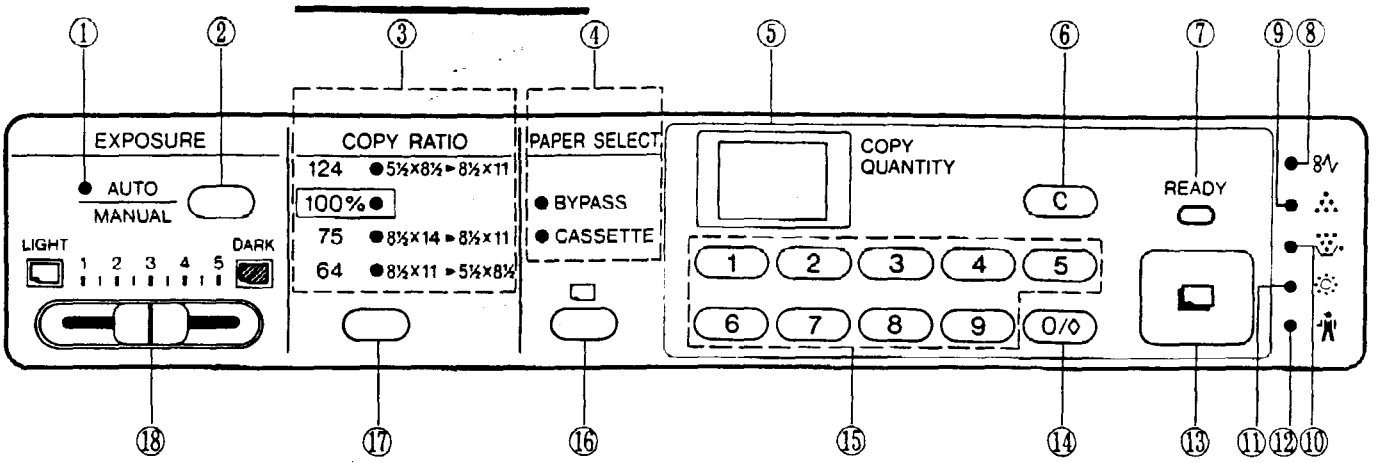
2. Internal parts



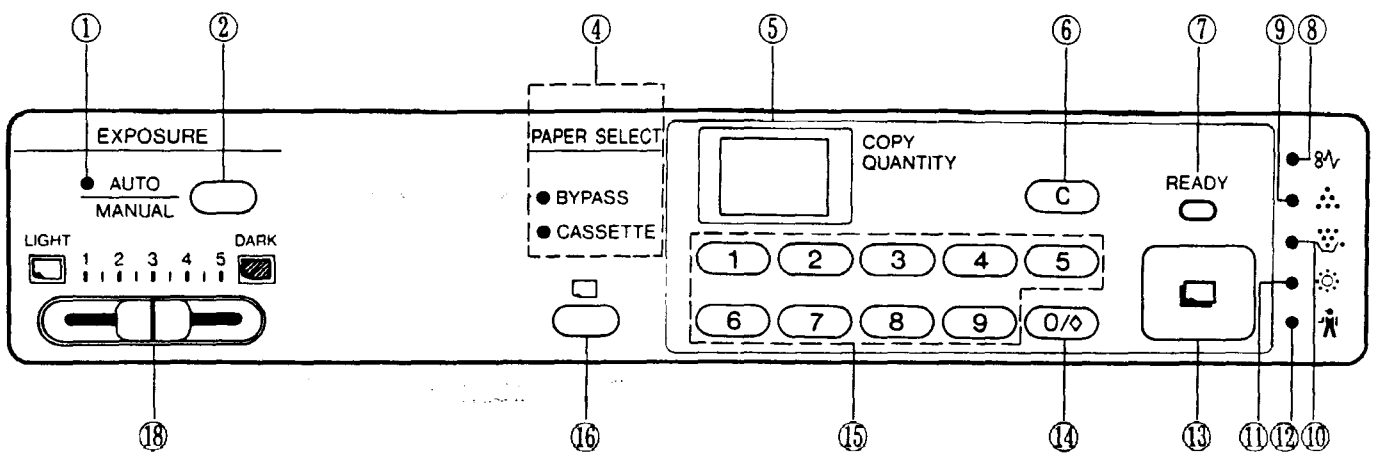
3. Operation panel

SF-7350





SF-7300



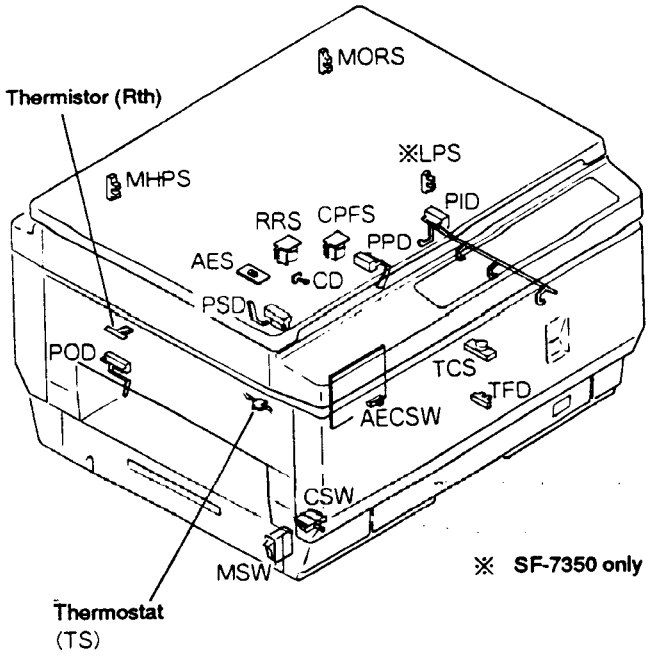
①	Auto/manual exposure indicator	②	Auto/manual exposure switch	③	Magnification ratio indicator
④	Paper select indicator	⑤	Copy number indicator	⑥	Clear key
⑦	Ready indicator	⑧	Misfeed indicator	⑨	Toner replenish indicator
⑩	Waste toner replace indicator	⑪	Replace developer indicator	⑫	Maintenance indicator
⑬	Print switch	⑭	Zero/recall key	⑮	Numeric keypad
⑯	Paper select key (valid only when optional multi-bypass stacker is used)	⑰	Copy ratio select key	⑱	Manual exposure control knob

● The waste toner full indicator will flash when the waste toner container is not installed or the shutter is not closed.

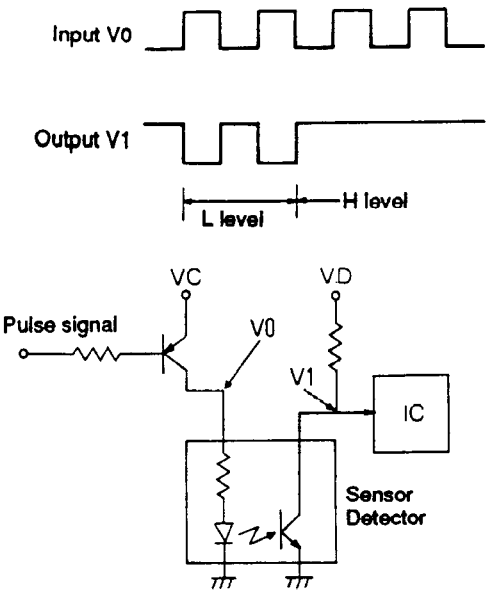
After completion of copying, the copier will return to the normal condition in 90 seconds.

Normal condition: auto exposure mode, normal copy mode (100%), copy number display 0

4. Switches, sensors, detectors, and solenoids

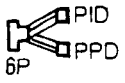


For sensors and detectors (PID, PPD, PSD, POD, MORS, LPS) are dynamically driven (pulse input), the low level signal will be as shown below.

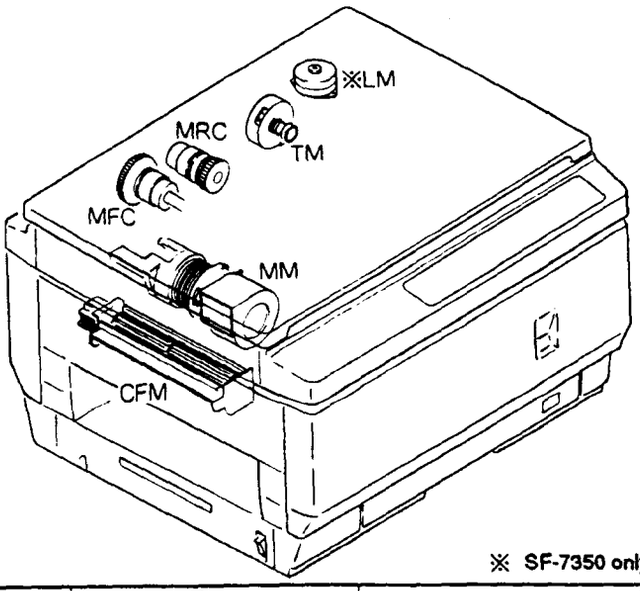


Abbreviation	Name	Type	Function	Contact/output
PID	Paper In Detector	Photoswitch	Manual feed paper detector	Low when paper is on.
PPD	Paper Pass Detector	Photoswitch	Paper feed block paper path detector	High when paper is on.
PSD	Paper Separation Detector	Photoswitch	Paper separation detector	Low when paper is on.
POD	Paper Out Detector	Photoswitch	Fuser block paper detector	Low when paper is on.
MHPS	Mirror Home Position Sensor	Transmittive type photosensor	Mirror base home position sensor	High when on the home position.
MORS	Mirror OverRun Sensor	Transmittive type photosensor	Mirror base overrun sensor	High when overrun.
LPS (*)	Lens Position Sensor	Transmittive type photosensor	Lens position sensor	Low when a timing slit is sensed.
AES	Auto Exposure Sensor	Photodiode	Document contrast sensor	Low signal output when document contrast is high and high output when document contrast is low.
AECSW	AE Correction Switch	Slide switch	Automatic exposure control switch	D: Low copy lamp voltage L2: High copy lamp voltage
TCS	Toner Concentration Sensor	Magnetic sensor	Toner concentration sensor	High when toner concentration is low.
TFD	Toner container Full Detector	Transmittive type photosensor	Full waste toner bottle sensor	High when waste toner is full.
CD	Cassette Detector	Pushswitch	Cassette presence sensor	ON when a cassette is in.
CSW	Cabinet SWitch	Interlock switch	Front cabinet position sensor	ON when closed.
MSW	Main SWitch	Seesaw switch	Power switch	ON when closed.
Thermistor (Rth)	Thermistor	Thermistor	Fuser block temperature detection	High resistance when temperature is low (high VRth).
Thermostat (TS)	Thermostat	Thermostat	Fuser block high temperature detection	Contact breaks when a high temperature is sensed.
CPFS	Cassette Paper Feed Solenoid	Solenoid	Paper takeup roller control solenoid	Takeup roller starts operating when ON.
RRS	Resist Roller Solenoid	Solenoid	Resist roller control solenoid	Resist roller starts operating when ON.

PID and PPD are available as a pair under the parts name of PPID.



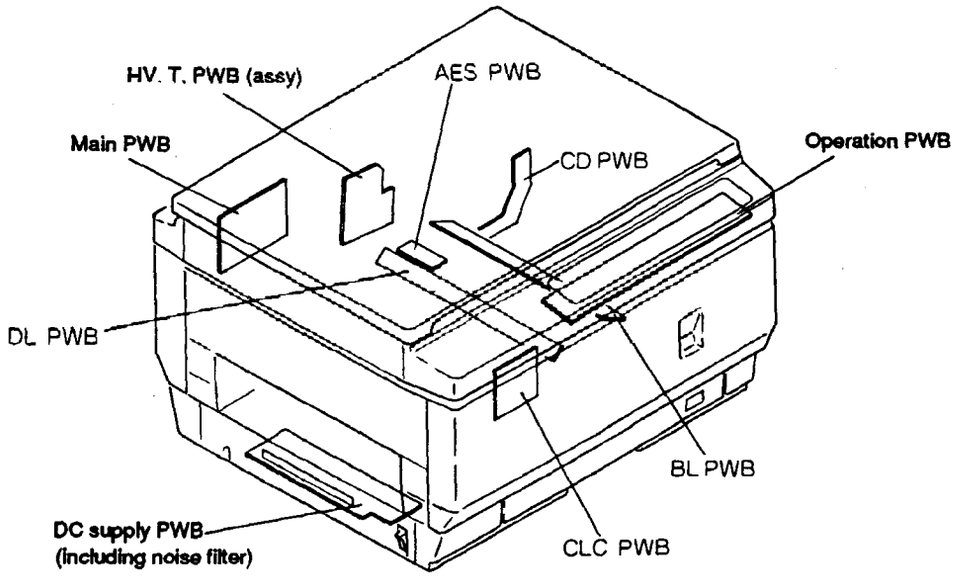
5. Magnetic clutch and motors



※ SF-7350 only

Abbreviation	Name	Type	Function
MFC	Mirror Feed Clutch	Magnetic clutch	Mirror base feed clutch. ON to drive the mirror base.
MRC	Mirror Return Clutch	Magnetic clutch	Mirror base return clutch. ON to return the mirror base.
MM	Main Motor	Induction AC motor	Drum, mirror base, and rollers driving motor
CFM	Cooling Fan Motor	Induction AC motor	Cooling fan drive motor
TM	Toner Motor	Synchronous motor	Toner supply motor
LM (*)	Lens Motor	Stepping motor	Lens driving motor (SF-7350 only)

6. PWB



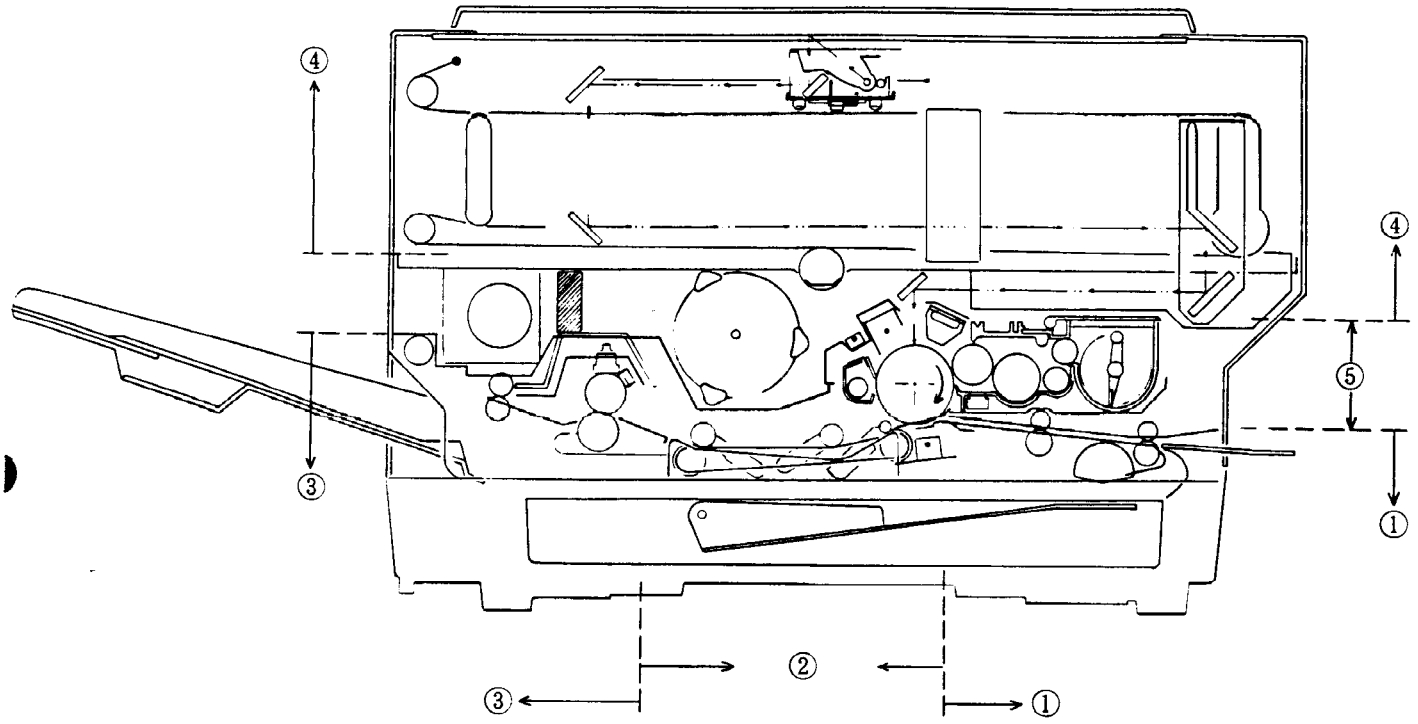
Name	Description	SF-7350 interchange vs. SF-7300
Main PWB	The nucleus of the electronic control system which controls circuits and loads. A single chip microcomputer with internal ROM and RAM chips is used for the main controller.	Not interchangeable.
HV. T. PWB (assy)	Consists of high voltage transformer circuits, transformer drive circuits, and control circuits. If MC or TC bias output is out of limits, adjustment is required using the output adjusting pot provided on the board.	Interchangeable.
CD PWB	Consists of cassette size detect switches and a paper feed signal interface circuit.	Interchangeable.
Operation PWB	Consists of a display circuit and keyboard sense circuit.	Not interchangeable.
BL PWB	Used to optically discharge the drum.	Not interchangeable.
CLC PWB	Used to control copy lamp intensity. As the ME, AE adjusting pots and automatic exposure control switch are located on the board, light intensity can be adjusted.	Interchangeable.
DL PWB	Used to optically discharge residual charge on the drum.	Interchangeable.
DC supply PWB	Used to create DC supply by rectifying the source power.	Interchangeable.
AES PWB	Used to sense contrast of a document.	Interchangeable.

[5] DESCRIPTION OF EACH BLOCK

Description of each block is given below.

(1) Paper feed block
(2) Separation/transport block
(3) Fusing/paper delivery block
(4) Optical block
(5) Image process block

Machine overall view



Parts location of paper feed block

(1) Paper feed block

Two-ways are provided for feeding paper; cassette feed and manual feed.

A 250-sheet universal cassette is inserted in the machine through the lower part of the front cabinet.

Manual feed can be used to load a special paper or to make a copy on both sides of the paper.

It is also possible to use a multi-bypass stacker. (Optional)

Cassette paper size range:

Paper size: B4 to A5 (10" x 14" to 8-1/2" x 5-1/2")

Paper weight: 48 to 68Kg (56g to 80g/sq. meter)

Manually bypass paper size range:

Paper size: B4 to A6 (10" x 14" to 8-1/2" x 5-1/2")

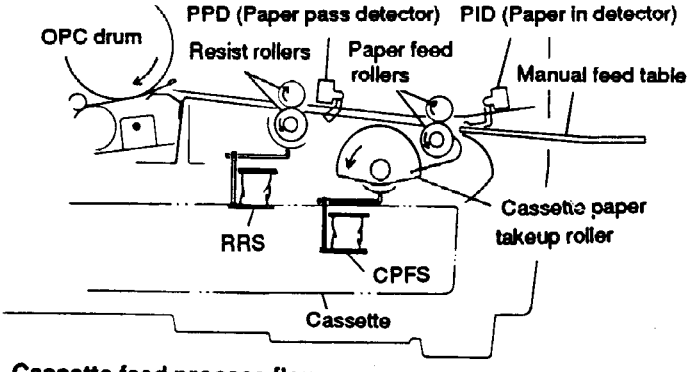
Paper weight: 45 to 110Kg (52g to 128g/sq. meter), but, the paper exceeding 90Kg (105g/sq. meter) must be smaller than A4 (8-1/2" x 11-1/2").

Kinds of special papers (manual feed only):

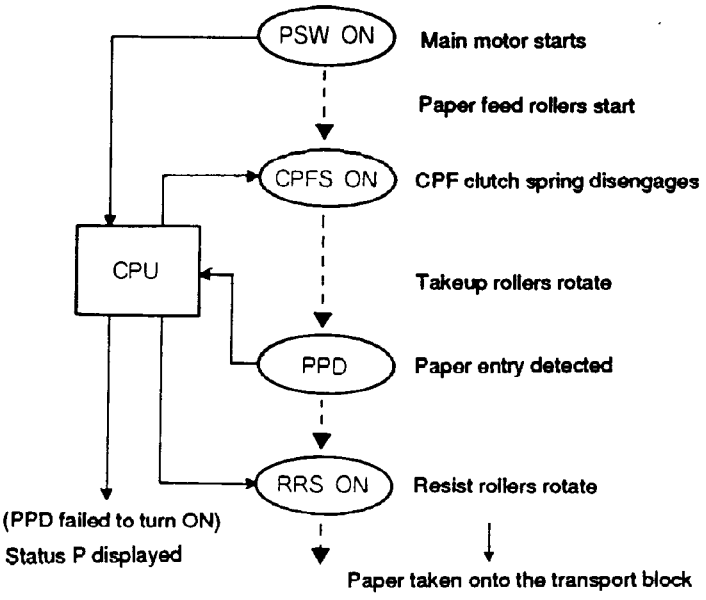
Second side: 45 to 60Kg (52 to 70g/sq. meter)

Overhead projector film: 60 to 110Kg (70 to 128Kg/sq. meter)

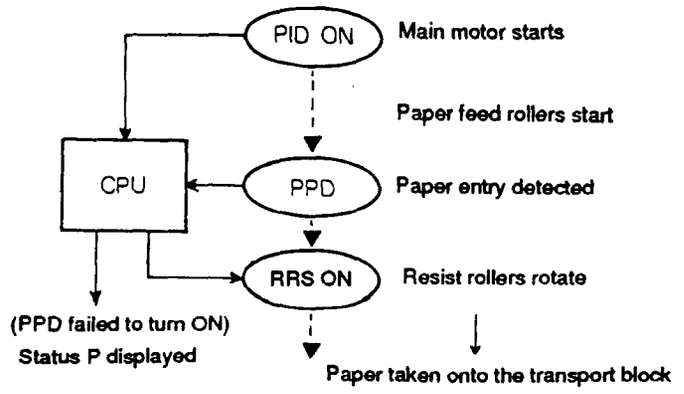
Label and card: 60 to 110Kg (70 to 128g/sq. meter)



Cassette feed process flow



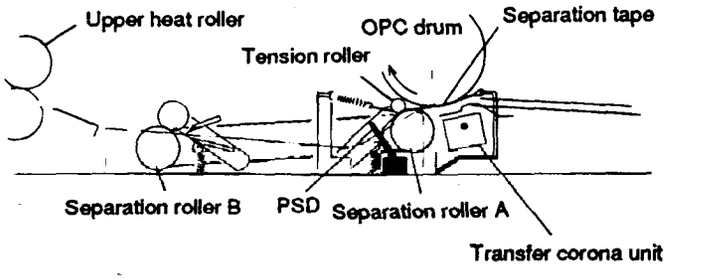
Manual feed process flow

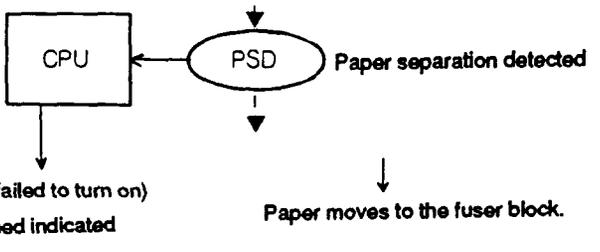


(2) Separation/transport block

Paper fed into the machine is transported to the transfer block. An area of about 7mm on the rear frame side passes under the remover tape and does not make contact with the drum, which causes a void area on the copy.

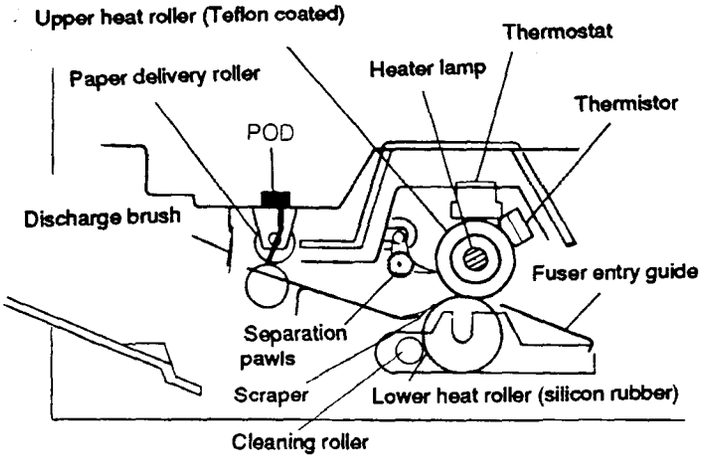
After the image is transferred, the portion under the remover tape is held between the separation roller A and the tension roller and the paper is separated from the drum. The paper is then transported to the fusing block by means of the separation roller B.

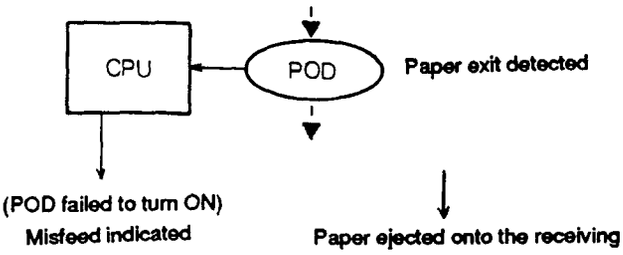




(3) Fusing/paper delivery block

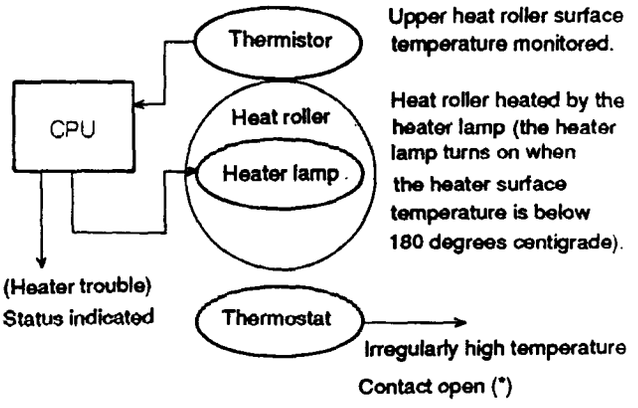
The toned image, transferred to the paper, is fused using heat and pressure. Static on the paper is removed by means of the discharge brush when the copy is delivered into the receiving tray.





Temperature control

Thermistor Heat roller surface temperature detected


Thermistor
Upper heat roller surface temperature monitored.
CPU
Heat roller
Heater lamp
Heat roller heated by the heater lamp (the heater lamp turns on when the heater surface temperature is below 180 degrees centigrade).
(Heater trouble)
Status indicated
Thermostat
Irregularly high temperature
Contact open (*)

- Irregularly high temperature (H3)
- Irregularly low temperature (H4)
- Open thermistor (H2)

(*) When the thermostat is open, the reset button on the top of the thermostat must be pushed down to reset, as it is not sel resetting.

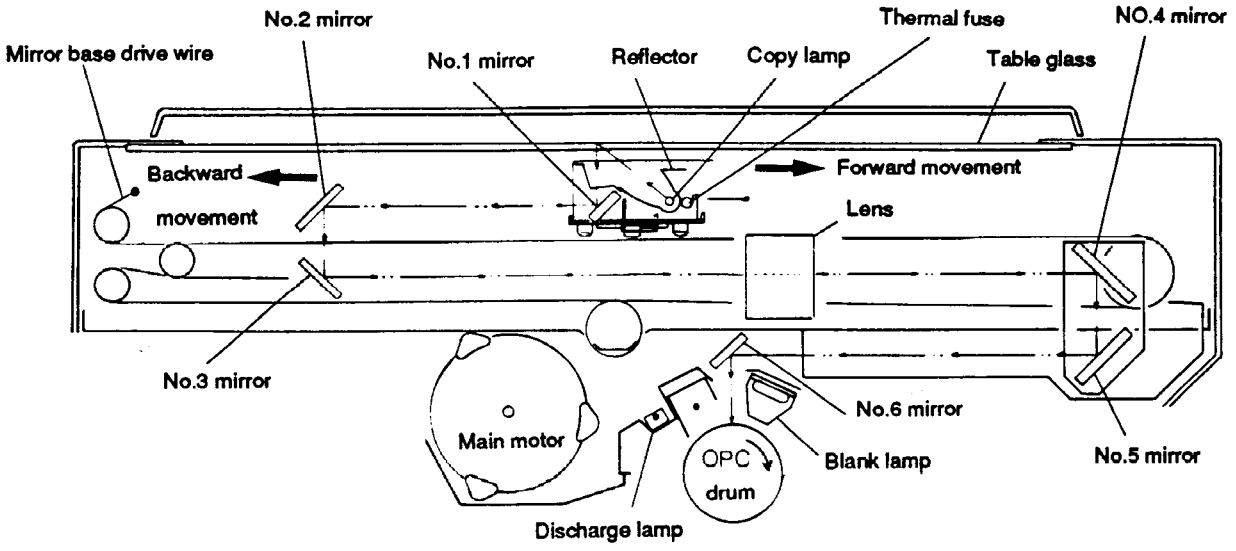
(4) Optical block

- The optical block consists of a fixed focus lens and six mirrors.

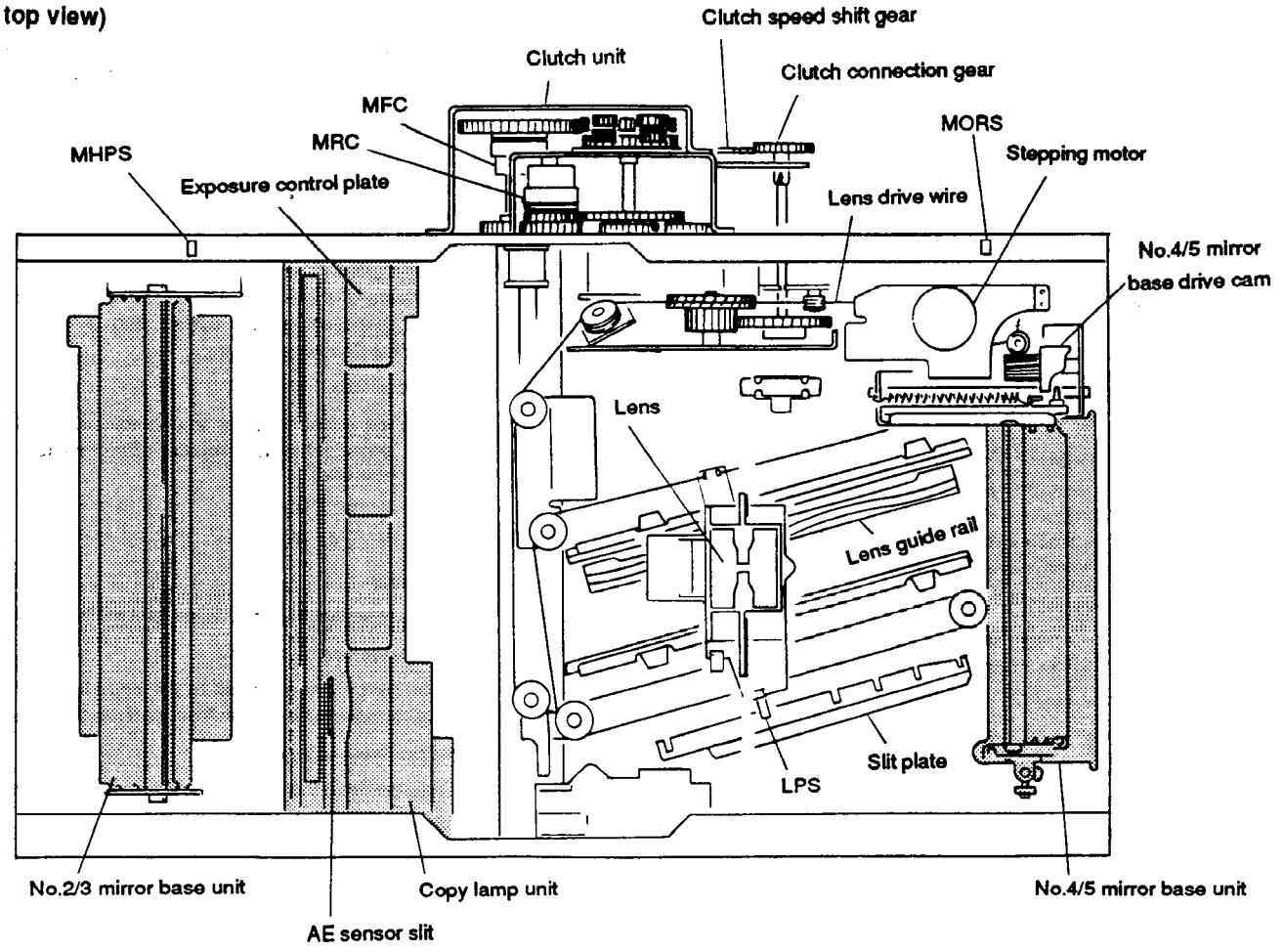
  Because a fixed focus lens is used, the No.4 and 5 mirrors are moved according to the magnification ratio, to change the distance between the document and the drum (OID: Original Image Distance).

  A stepping motor is employed to move the lens and mirror locations to four steps of magnification. The SF-7300 does not incorporate the magnification feature.

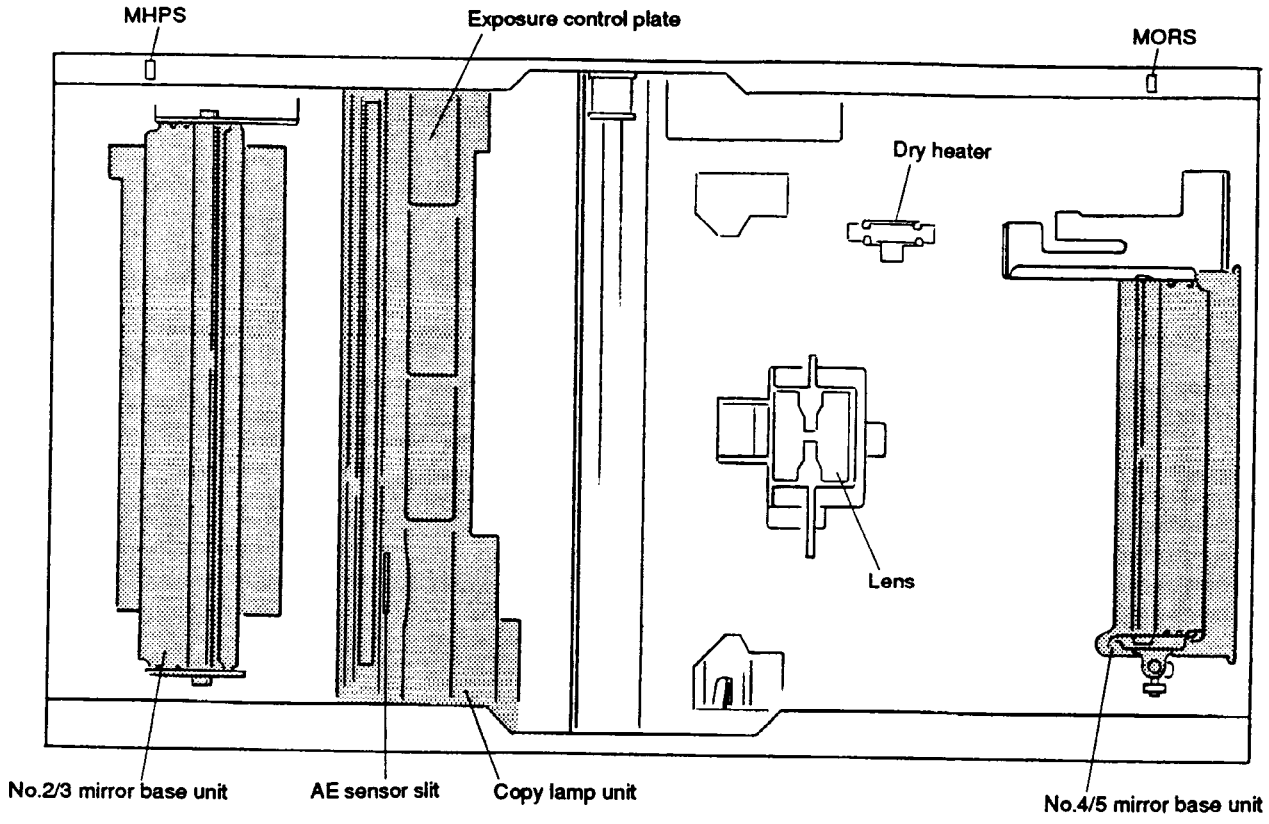
- Exposure is controlled by varying the copy lamp voltage. The AE sensor is in the copy lamp unit to sense document contrast. Light reflected from the document is received by the AE sensor to determine exposure.
- Slit exposure control method is used for the moving light source (stationary platen).



(SF-7350 top view)



(SF-7300 top view)



A. Name and function of each component

(1) Document table

The document table is stationary and the original is aligned to the front corner of the document guide.

(2) Copy lamp

100V series: 80V, 250W

200V series: 160v, 250w

Voltage to the copy lamp is controlled by the CLC circuit to produce stable exposure according to document contrast.

(3) Lens

Fixed focus lens

(4) Lens position sensor (LPS)(SF-7350 only)

Output signal from this sensor is used for the basic signal to determine the copy magnification ratio.

(5) Lens carriage (SF-7350 only)

The lens and LPS are mounted on this base which is driven by the lens/mirror drive motor to move towards the paper entry side when in the reduction mode or towards the paper exit side when in the enlargement mode.

(6) Lens guide rail (SF-7350 only)

The lens carriage travels over the lens guide rail to control the lens optical axis in the magnification mode.

(7) Lens drive wire (SF-7350 only)

Connected to the lens/mirror drive wire to control the No.4/5 mirror and clutch speed shift gear.

(8) No.4/5 mirror base unit

The No.4 and 5 mirrors are mounted on this unit and shift position by means of the lens/mirror drive motor to match the original image distance. (SF-7350 only)

(9) No.4/5 mirror base drive cam (SF-7350 only)

Used to shift the position of the No.4/5 mirror base driven by the lens/mirror drive motor.

(10) • Mirror home position sensor (MHPS)
A transmittive type photosensor is used to detect the position of the copy lamp unit home position.
• Mirror overrun sensor (MORS)
A transmittive type photosensor is used to detect the position of the copy lamp unit overrun position.

(11) No.2/3 mirror base unit

This unit moves to scan the document image.

(12) Copy lamp unit

Consists of the No.1 mirror, thermal fuse, AE sensor, copy lamp, exposure control plates, and reflector, and moves to scan the document image.

(13) Thermal fuse

Attached to the reflector and functions to shut off the copy lamp power when an irregular optical system temperature is encountered.

100V: (119°C, 10A)

200V: (119°C, 10A)

(14) Reflector

Used to reflect the copy lamp light on the document.

(15) Exposure control plates

Four plates are attached to the copy lamp unit to adjust exposure balance between front and rear frame sides.

(16) Mirror base drive wire

Used to drive the copy lamp unit and No.2/3 mirror base

(17) Stepping motor (SF-7350 only)

Used to drive the No.4/5 mirror base and the clutch speed shift gear.

(18) AE sensor

The photodiode is used to detect contrast of the document by

the intensity of the light reflected from the original surface. The sensor working area is (100)mm wide from the front.

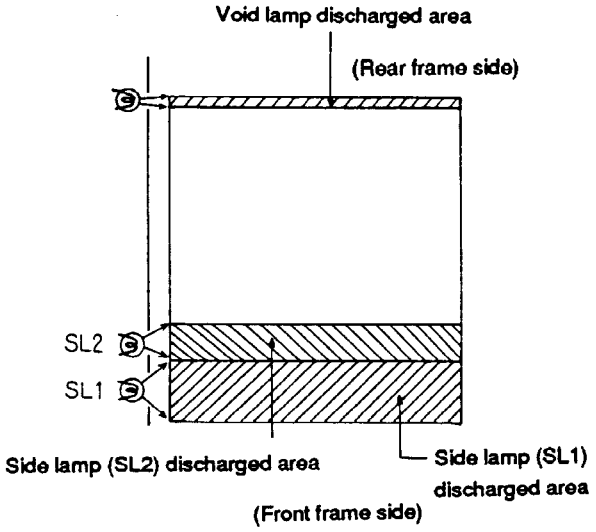
(19) Blank lamp

Consists of side lamps (SL1, 2) and void lamp installed on the drum unit. In the reduction mode, light from the side lamp is projected over the non-image area of the drum to discharge the area so that toner is not applied to the non-image area. The void lamp light is applied to the tape contact area to prevent depositing of toner.

Only the void lamp is used for the SF-7300.

Void lamp activation (figure within parenthesis is for the inch series).

Magnification ratio	SL1	SL2
x0.80 (x0.75)	ON	OFF
x0.70 (x0.64)	ON	ON

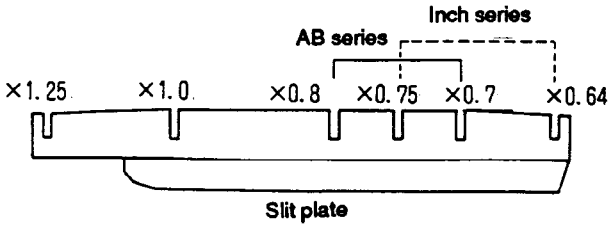


B. Magnification operation (SF-7350 only)

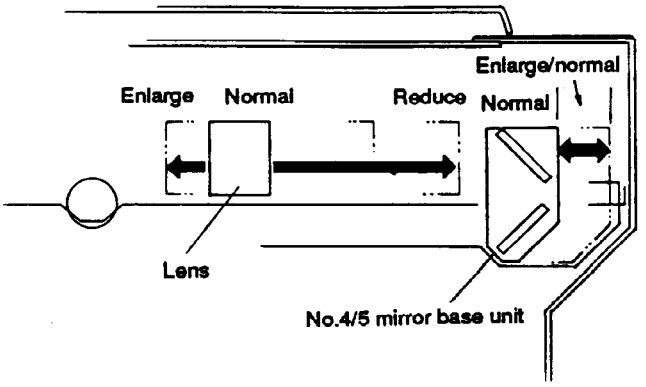
When the magnification ratio is chosen, the stepping motor rotates to shift the position of the lens, mirrors (No.4, No.5), and rotate the clutch connection gear.

When the slit assigned to the given magnification ratio is sensed by the lens position sensor (LPS), the stepping motor stops. With this, the lens, mirrors (No.4, No.5), and the clutch speed shift gear stop at their correct locations.

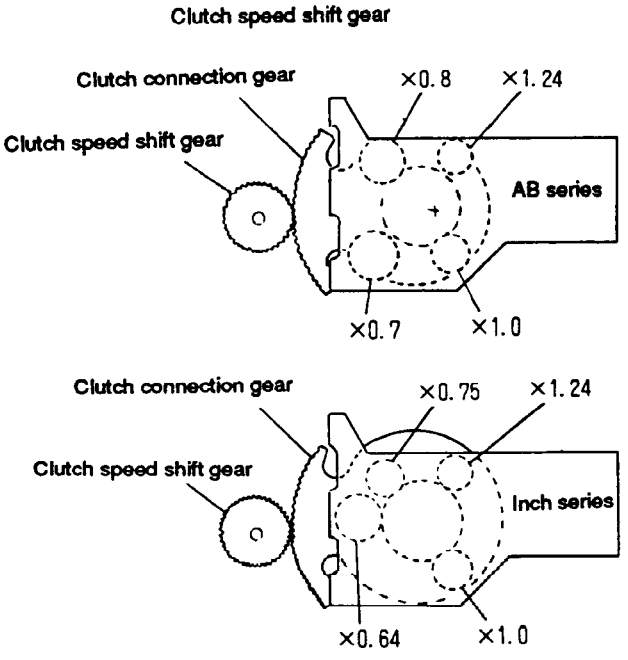
(Slit position vs. magnification ratio)



(Lens and mirror moving range)

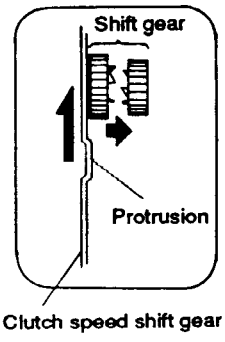


(Clutch speed shift gear position)



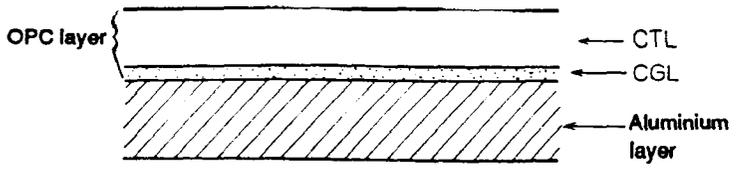
(Selection of speed shift gear)

When the protrusion in the clutch speed shift gear pushes up the gear, the appropriate gears engage.



(5) Image process block

- The SF-7300/SF-7350 use an Organic Photo Conductor (OPC) drum.



CTL (Charge Transport Layer) of 21 microns

CGL (Charge Generator Layer) of 0.2 to 0.3 microns

A. The basic copy process

Operational theory

A charge is applied over the OPC drum surface from the main corona unit. The image exposed by the copy lamp is projected over the drum. The charge on the drum surface is dissipated in all area except, for the character areas of the original, to form a latent image on the drum surface. Toner is attracted to the charge on the drum surface and a visible image is now formed on the drum.

Step 1. Charge (Transfer corona unit)

A uniform negative charge is applied over the OPC drum surface by transfer corona unit.

Step 2. Cleaning

The residual toner left on the drum surface after transfer is removed by the cleaner unit.

Step 3. Optical discharge

Residual charge on the drum surface is removed by the discharge lamp.

After Step 1 (charge), Step 2 (cleaning) and Step 3 (discharge), the drum surface potential becomes stable and is ready for operation.

Step 4. Charge (Main corona unit)

A uniform negative charge is applied over the drum surface by the main corona unit.

Step 5. Exposure

An electrostatic latent image is formed over the drum surface.

Step 6. Developing

The electrostatic latent image is converted into a visible image by the toner.

Step 7. Transfer (Transfer corona unit)

The visible image on the drum surface is transferred onto the copy paper.

Step 8. Cleaning

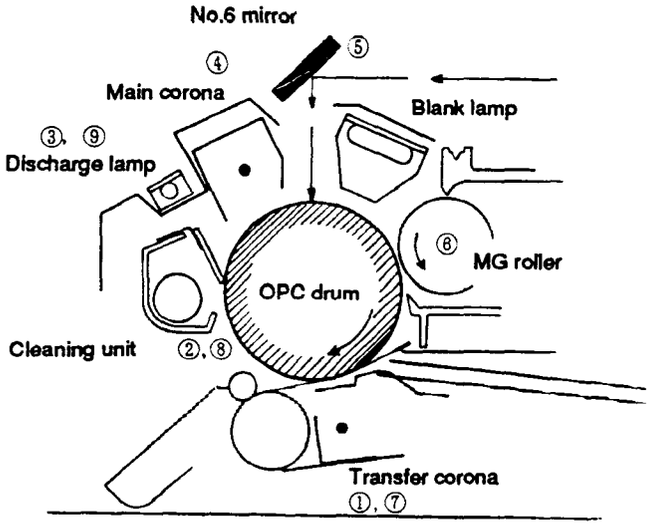
Toner remaining on the drum is collected by the cleaner blade.

Step 9. Optical discharge

Residual charge on the drum surface is removed by the discharge lamp.

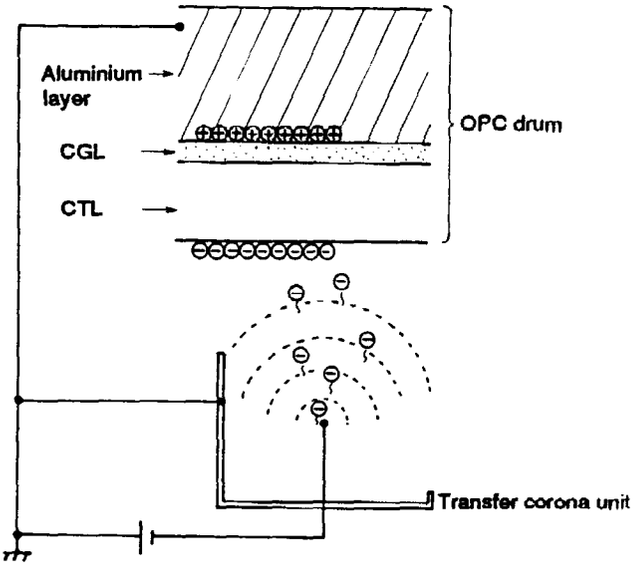
B. Copy steps

○ : Step number



Step 1: Charge (Transfer corona unit)

Prior to going into the copy cycle, a uniform negative charge is applied over the drum surface by the negative transfer corona unit. A positive charge appears in the aluminium layer.



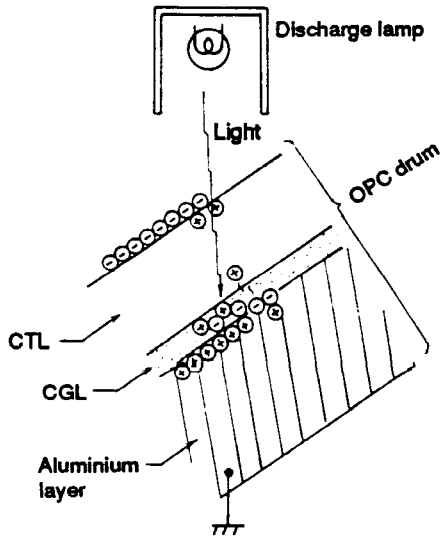
Step 2: Cleaning

Surface of the drum is cleaned by the cleaning blade.

Step 3: Discharge

Light from the discharge lamp is projected onto the drum surface.

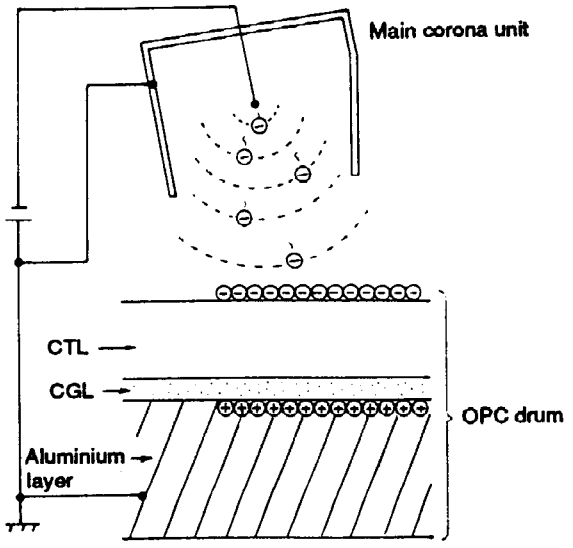
Positive and negative charges appear in the CGL of the drum. The negative charge in the CGL moves toward the positive charge in the aluminium layer. Meanwhile, the positive charge moves toward the negative charge on the drum surface created at Step 1. The drum's surface charge is reduced to a very low potential (almost 0 volts) because of the neutralization effect that occurs between the positive and negative charges on both the drums surface and aluminum core.



After Step 1 (charge), Step 2 (cleaning) and Step 3 (discharge), the drum surface potential becomes stable and is ready for operation.

Step 4: Charge (Main corona unit)

A negative charge is applied over the drum surface by the main corona unit. A positive charge develops in the aluminium layer.



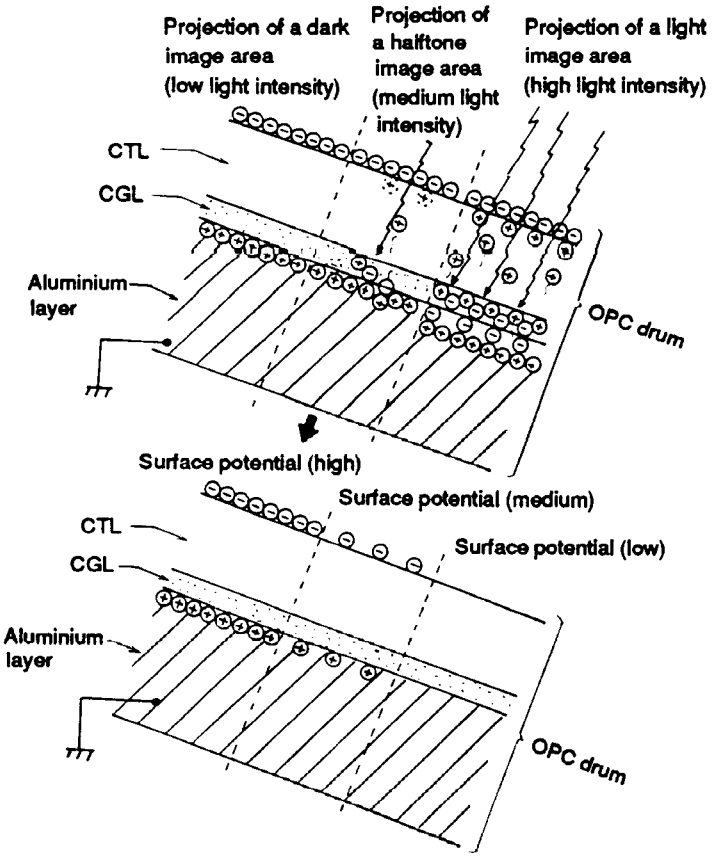
Step 5: Exposure

Light from the copy lamp is projected on the original and reflected onto the drum surface through the mirrors and lens.

Since more light is reflected from light image areas of the original, the respective drum area is exposed to more intense light. On the other hand, less light is reflected from dark image areas of the original so that the respective drum area is exposed to less intense light.

Negative and positive charges appear in the CGL. The negative charge caused in the CGL advances to the positive charge in the aluminium layer produced at Step 4, and the positive charge advances to the negative charge on the drum surface. Therefore, the positive and negative charge in the aluminium layer and the drum surface where exposed to light neutralize each other and the drum surface potential drops. Since the charge in the CGL is proportionate to the density of the original, more charge is created in the CGL areas exposed to more intense light. The decrease in the drum surface potential is greater as more of the drum surface negative charge is dissipated. On the other hand, the dark image portion (less intensive light projected area on the drum surface) has less CGL charge creation, so that a less drum surface potential decrease occurs. In this way, the electrostatic latent image is formed on the drum surface.

The dark image portion of the original reflects a less intense light back to the drum. This causes a lower charge in the corresponding areas of the CGL, which in turn causes little or no dissipation of drum surface potential.


Projection of a dark image area (low light intensity)
Projection of a halftone image area (medium light intensity)
Projection of a light image area (high light intensity)
CTL
CGL
Aluminium layer
OPC drum
Surface potential (high)
Surface potential (medium)
Surface potential (low)

Toner is then applied to the latent image on the drum surface in the development stage of the process. Toner will be attracted by only the higher charged or character areas of the drum surface forming a visible image.

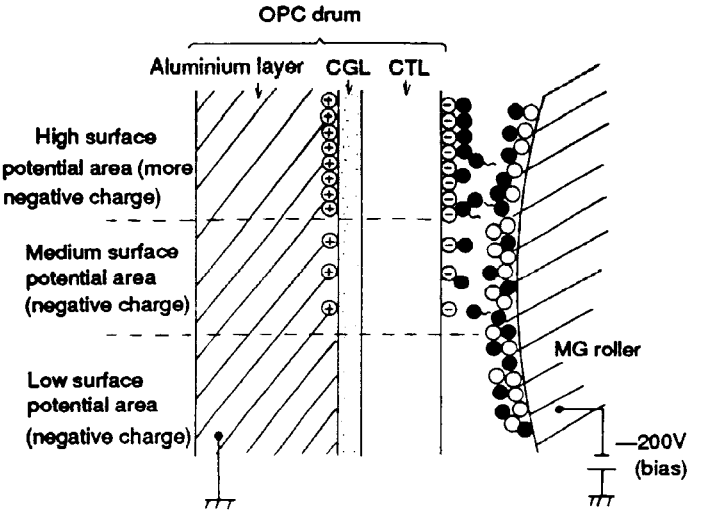
Step 6: Developing

Toner is attracted over the latent image area on the drum surface to form a visible image. Toner is positively charged by friction with the carrier. The SF-7300/SF-7350 employs two component magnetic brush developing system and toner is attracted by the negative charge on the drum surface.

Since the drum surface potential is higher in the dark image area (exposed to less intense light), more toner is therefore attracted and vice versa.

○ : Carrier (magnetic particle)

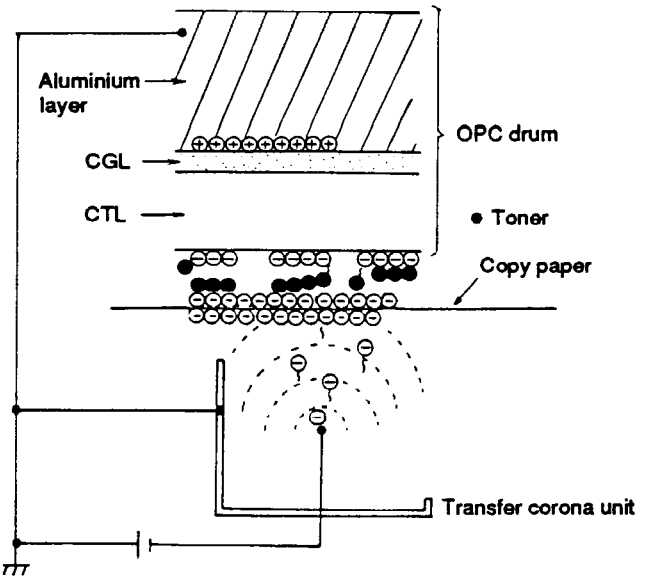
● : Toner (charged positive by friction)



Step 7: Transfer (Transfer corona unit)

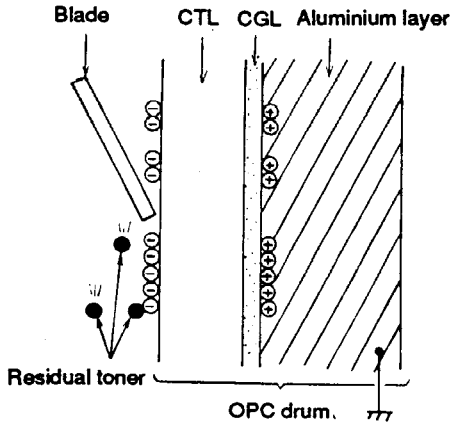
The copy paper is charged to a higher potential than the drum surface by means of a negative transfer corona unit, a stronger attraction exists appears between the copy paper and the toner than between the drum and the toner. So the toner is drawn from the drum to paper.

Toner transfer efficiency is between 70 to 80%, 20 to 30% remains on the drum.



Step 8: Cleaning

The toner remaining on the drum surface is removed by means of the cleaning blade. The waste toner is then deposited in the waste toner container using the waste toner carrying shaft.

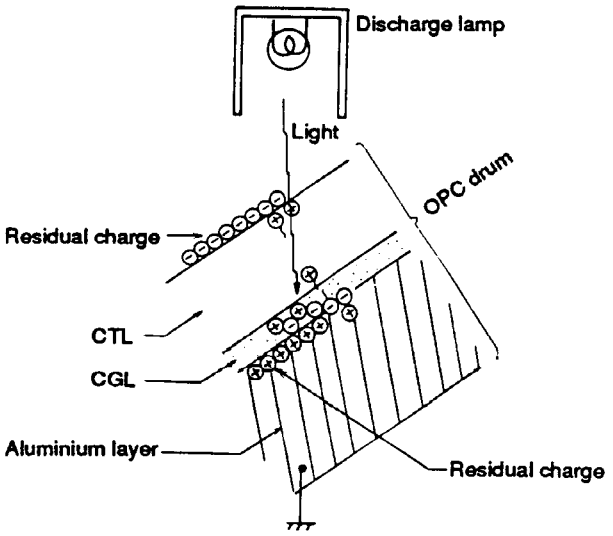


Step 9: Discharge

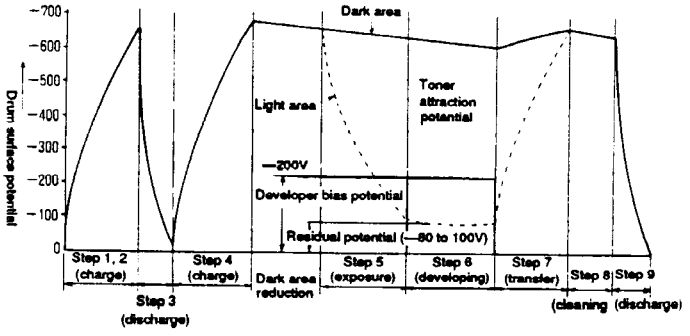
By exposing the drum surface to the discharge lamp, positive and negative charges appear in the CGL. The negative charge produced in the CGL advances toward the residual positive charge in the aluminium layer, while the positive charge advances in the aluminum toward the residual negative charge on the drum surface.

In this way, the positive charge and the negative charge neutralize each other on the drum surface and in the aluminium layer.

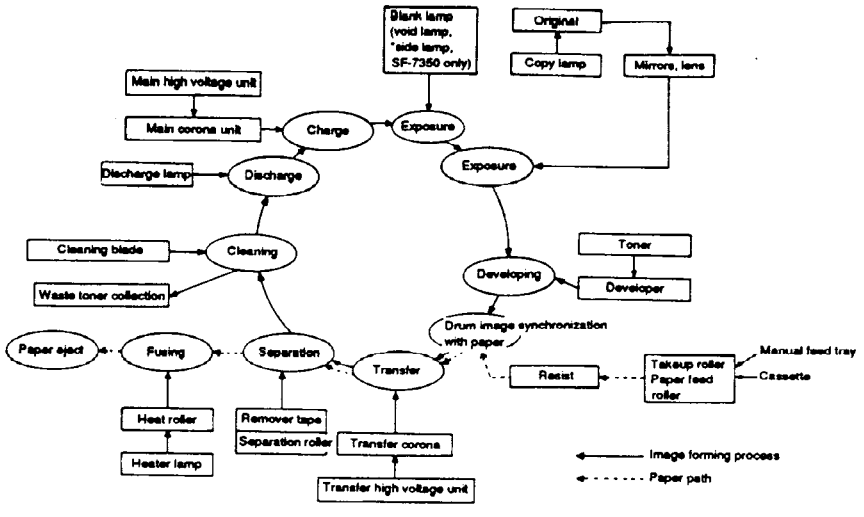
This causes the drum surface potential to approach 0 volts.



C. Transition of drum surface potential



D. Functional diagram

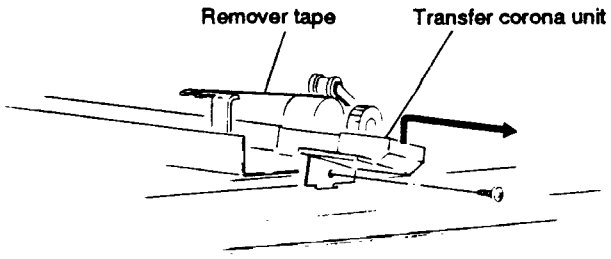


[6] PAPER FEED UNIT

1. Major parts replacement

A. Removing the paper feed unit

(1) Open the clam shell mechanism. Remove the transfer corona unit from the rear frame side with care not to damage the remover tape.

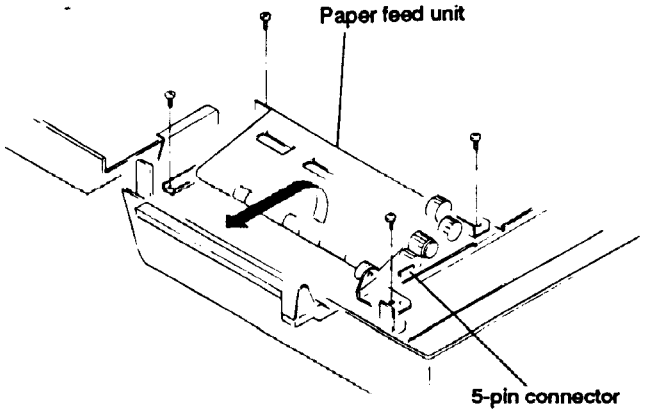


Rear frame side

(2) Remove the 5-pin connector.

Remove the paper feed unit holding screws (four).

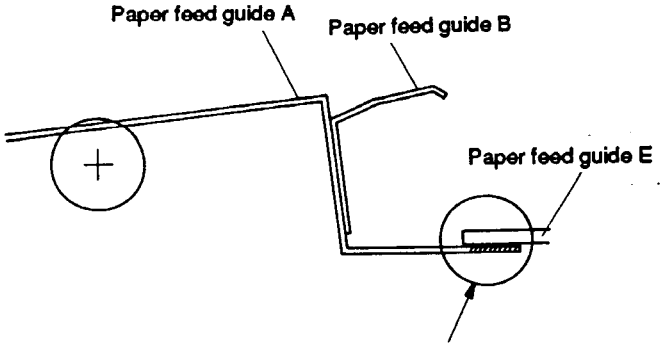
Remove the paper feed unit in the arrow direction.



Reverse the procedure to re-install.

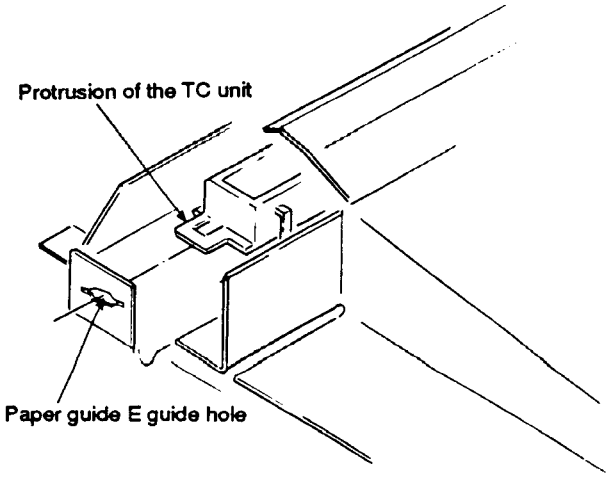
(Hints in installing the paper feed unit)

Insert the transfer side (hatched portion) of the paper guide (A) under the paper guide E.



(Hints in installing the transfer corona unit)

Insert the protrusion of the transfer corona unit into the guide hole in the front frame side paper guide E.



Front frame side

B. Removing the paper feed roller, u-turn roller, Resist roller

(1) Remove the paper feed unit, in reference to A-(1) thru (2).

(2)-a. (Paper feed roller)

Remove the paper feed roller spring clutch, paper feed solenoid armature, and the CD PWB.

Remove the paper feed roller. Three E-rings, two bushings, and one screw.

(2)-b. U-turn roller)

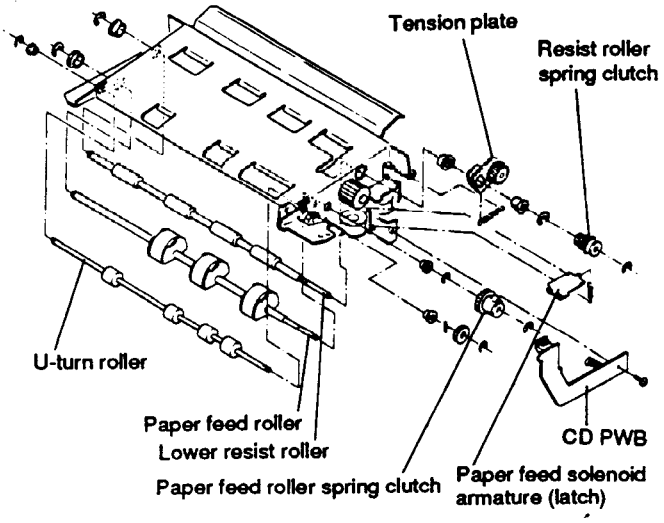
Remove the CD PWB, gear, and pin.

Remove the u-turn roller. Two E-rings, two bushings, and one screw must be removed.

(2)-c. (Lower resist roller)

Remove the resist roller spring clutch, tension plate, and spring.

Remove the resist roller. Three E-rings and three bushings must be removed.

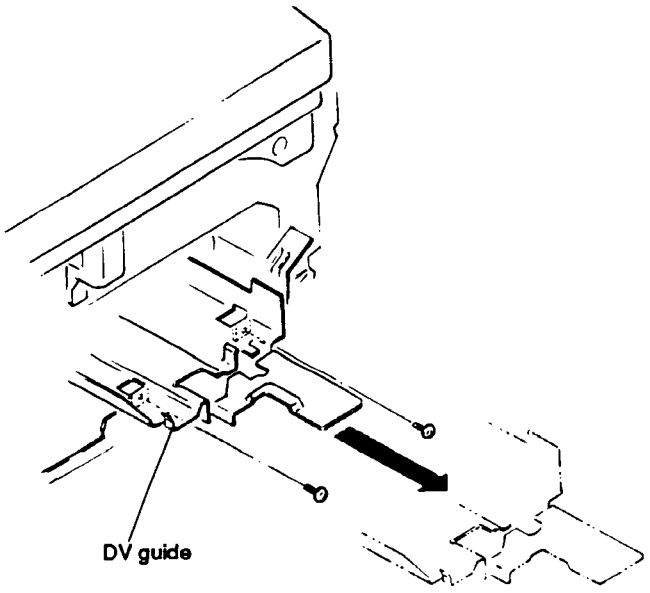


C. Removing the paper guide C unit

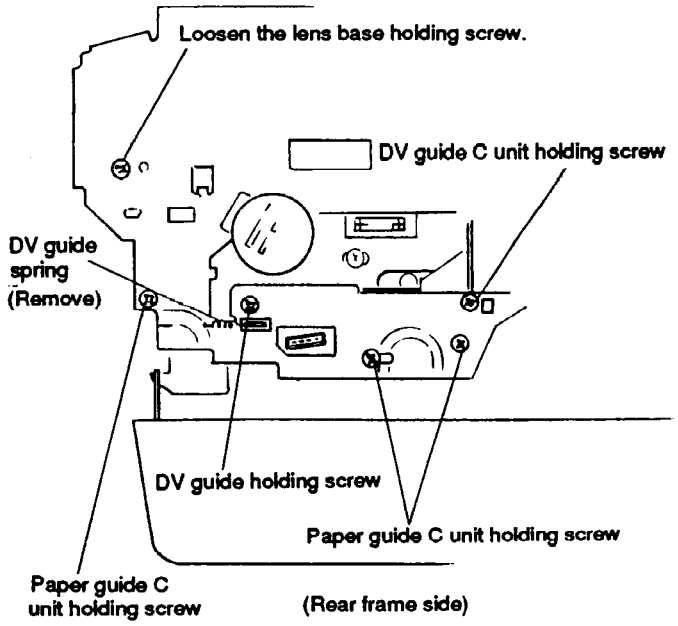
(1) Remove the DV unit.

(2) Remove the drum unit.

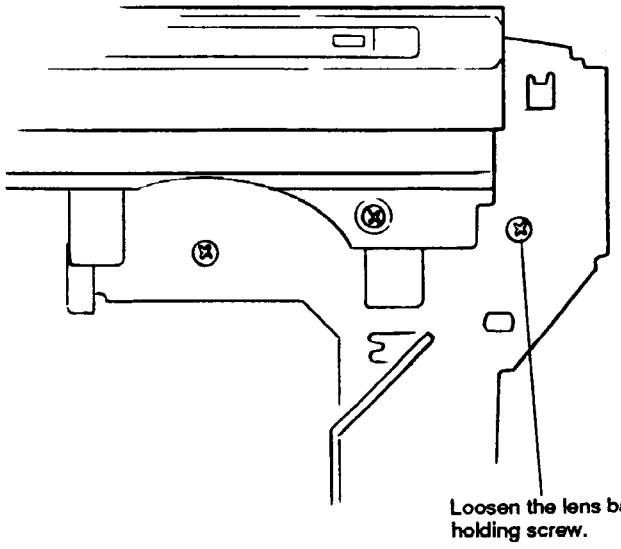
(3) Remove the DV guide (four screws).



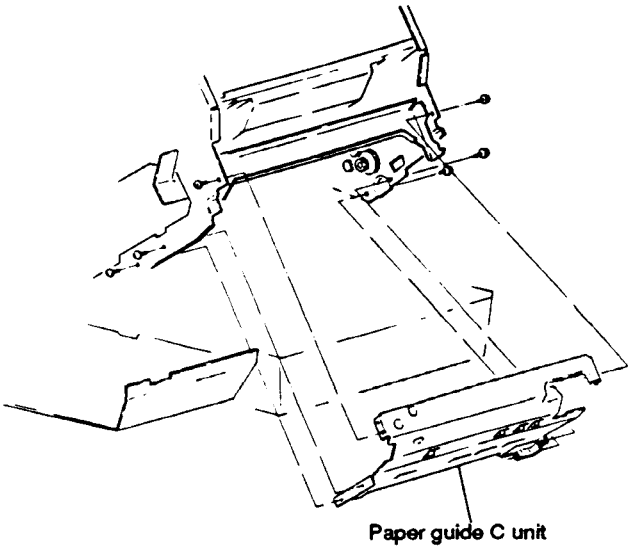
(Front frame side)


Loosen the lens base holding screw.
DV guide C unit holding screw
DV guide spring (Remove)
DV guide holding screw
Paper guide C unit holding screw
Paper guide C unit holding screw
(Rear frame side)

(4) Loosen the lens baseplate holding screw, one each on both frame sides.



(5) Remove the paper guide C unit (six screws).



D. Removing the PPID, upper resist roller, upper u-turn roller

(1) Removing the paper guide C unit, in reference to C-(1) thru (5).

(2) (PPID)

Release the hook of the PID and remove the PID. The guide stopper must be removed at the same time.

Release the hook of the PPD and remove the PPD.

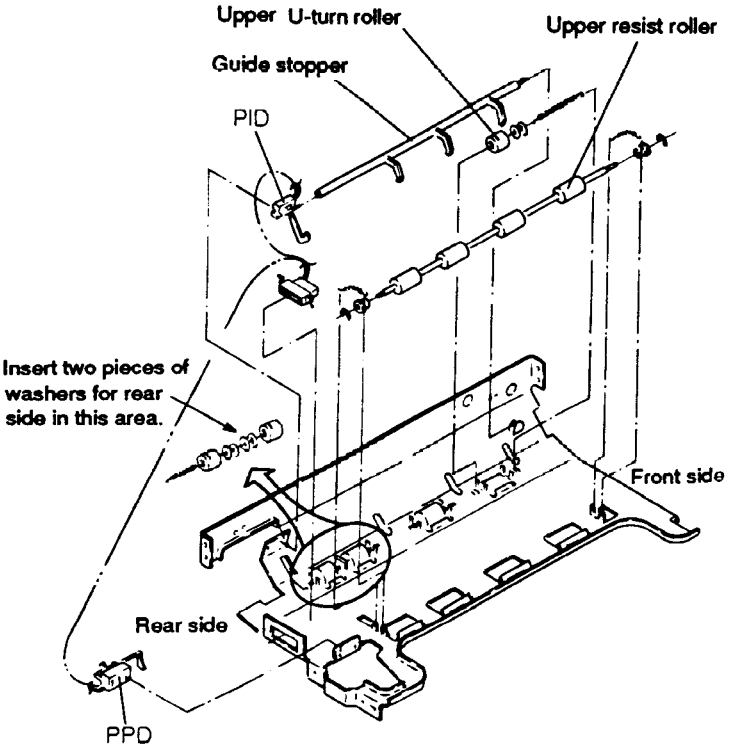
(Upper u-turn roller)

Remove the spring and remove the upper u-turn roller.

(Upper resist roller)

Remove two springs, two E-rings, and two bushings.

Remove the upper resist roller.



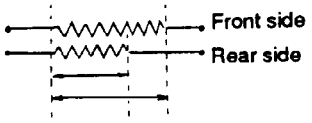
Re-assembly hints and tips

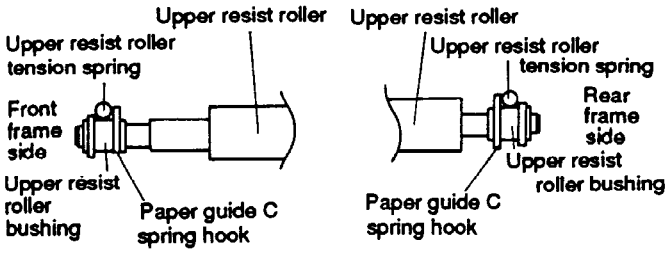
a. When re-assembling the guide stopper, make sure that the stopper can move smoothly by its own weight.

b. Because the upper guide C is treated with an electrically evaporated coating, be careful not to scratch the surface contacted by the paper.

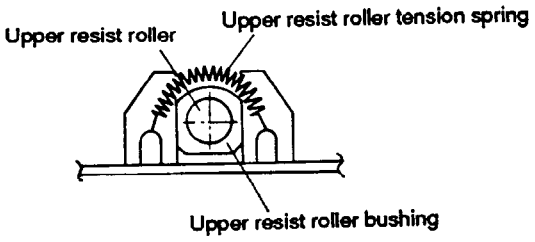
c. The upper resist roller must be installed in such a position that the upper resist roller tension spring is located between the paper guide C spring hook and the collar of the bushing, as illustrated below.

d. Note that shape of the resist roller tension spring differs between the front and rear frame sides; more tension is on the rear frame side tension spring.



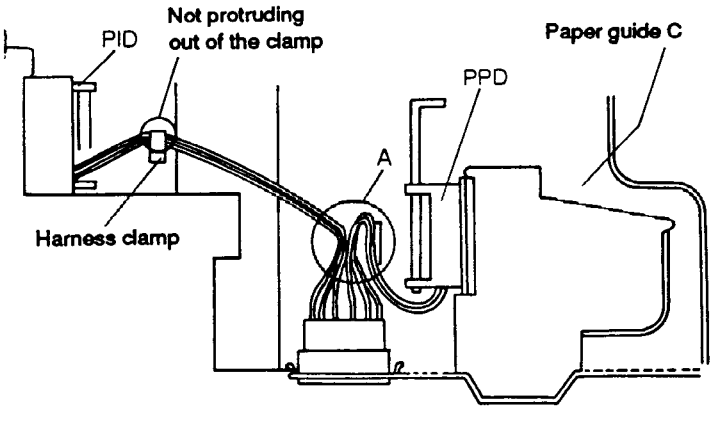

Upper resist roller
Upper resist roller tension spring
Front frame side
Upper resist roller bushing
Paper guide C spring hook
Upper resist roller
Upper resist roller tension spring
Rear frame side
Upper resist roller bushing
Paper guide C spring hook

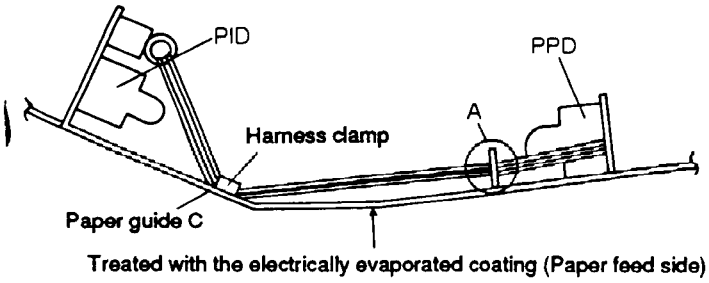
The flat side of the upper resist roller bushing must face down.



e. Wire routing

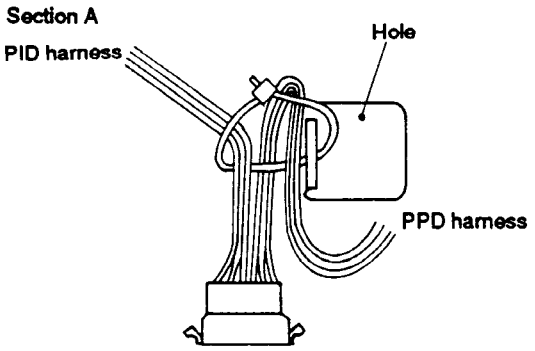
The harness must be routed in the following manner:



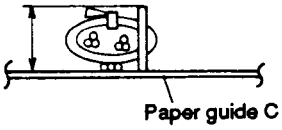


Treated with the electrically evaporated coating (Paper feed side)

View of harness route



No part of the clamp should protrude out of this area.



2. Adjustments

A. Paper feed roller angular adjustment

Adjustment is required for any of the following reasons:

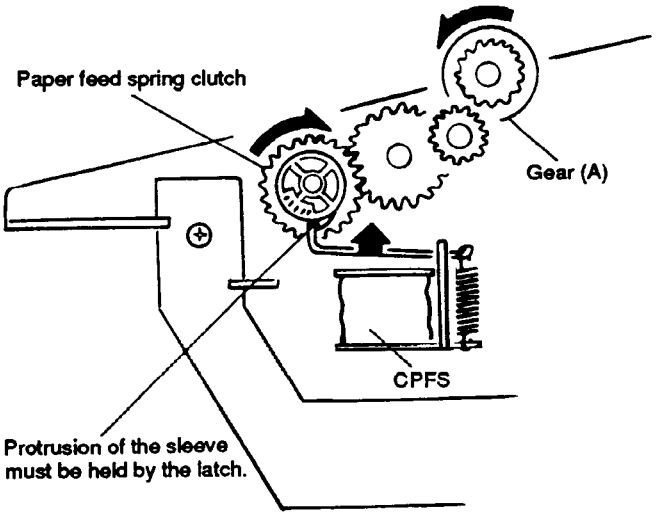
- Misfeed in the paper feed unit
- When component parts are disassembled or replaced.

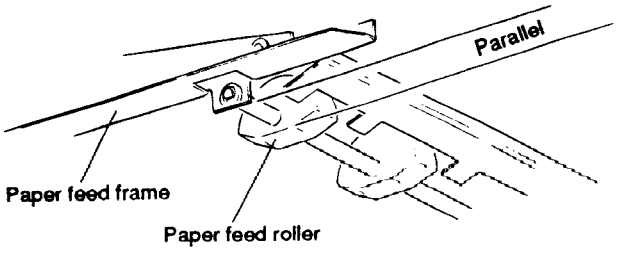
(Check procedure)

(1) Remove the paper feed unit from the frame. (See 1-A-(1)-(2))

(2) Manually rotate the gear (a) in the arrow direction and stop it when the protrusion on the clutch sleeve comes in contact with the paper feed latch.

At this time make sure that the paper feed roller is parallel to the lower part of the paper feed frame. Allowance is 0 ±5°.





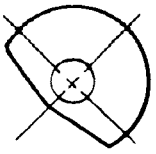
(View from front frame side)

(Adjustment procedure)

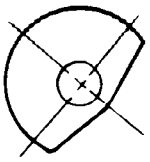
(1) Check an angular deviation of the paper feed roller.

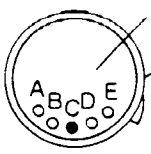
(2) Change the location of the clutch spring according to the direction of angular deviation.

(View from the rear frame side)

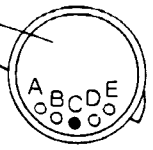


(View from the rear frame side)





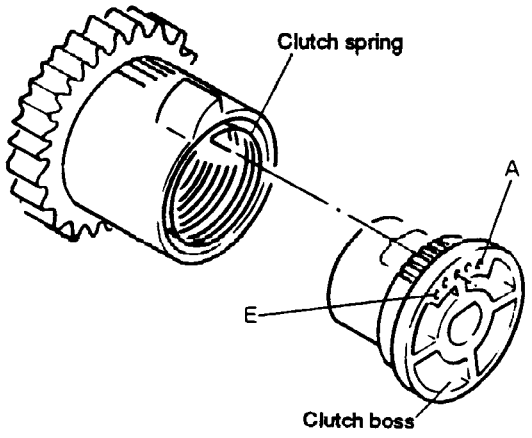
Change the location from the standard hole position C to B or A.



Change the location from the standard hole position C to D or E.

(2)-a. Remove the spring clutch unit.

(2)-b. Change the location of the clutch spring relative to the clutch boss.



* When the clutch is disassembled, the inside of the clutch spring must be lubed with grease (UKOG-0062FCZZ).

[7] HIGH VOLTAGE UNITS

1. High voltage units

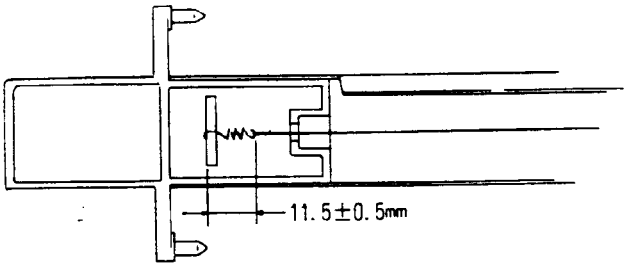
High voltage unit	Output	Drum current	
		Limits	Tolerance between both edges
Main corona	—5.8KVDC	—27 ±2μ	2μ, max.
Transfer corona	—5.5KVDC	—12 ±1.5μ	2μ, max.

2. Corona wire replacement

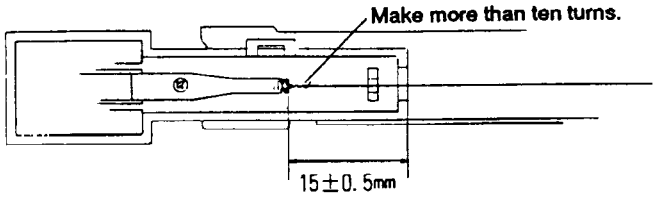
Refer to the figure below for replacement of the corona wire.

(Corona wire must be replaced at every 30000 copies.)

(1) Main corona unit (MC UN)

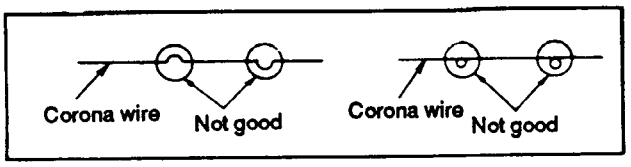


(2) Transfer corona unit



(Precautions when replacing the corona wires)

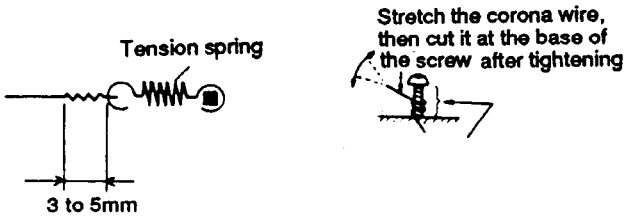
(1) The corona wire must not be twisted or kinked.



(2) Clean the corona wire after replacement with isopropanol alcohol only.

(3) Wipe dry after cleaning.

(4) Use the 70 micron corona wire (DWIR-0466CSZZ).

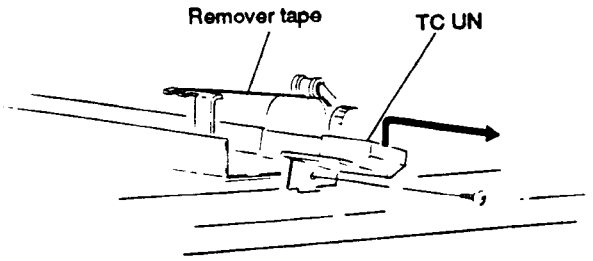


(Transfer corona removal)

(1) Open the clam shell.

(2) Remove the screws that hold the transfer corona unit.

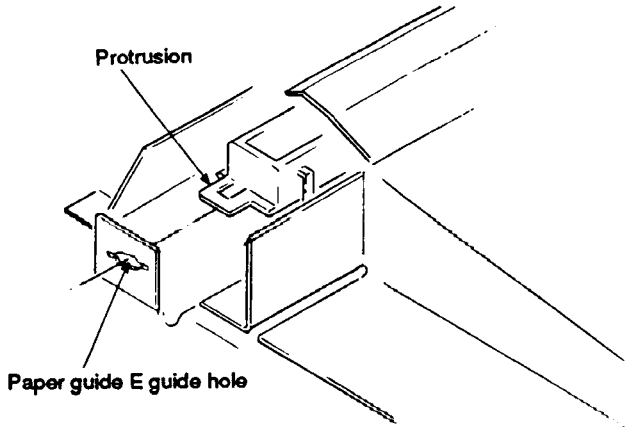
(3) Pull out the transfer corona unit from the rear frame side, take care not to damage the remover tape.



Rear frame side

(Precautions when installing the transfer corona unit)

Insert the protrusion on the transfer corona unit into the guide hole of the paper guide E on the front frame side.



Front frame side

3. High voltage unit output adjustments (DCD).

(1) Tools required:

(1) DCD test sheet (UKOG-0114FCZZ) — Used in SF-7200

(2) DCD test sheet harness (DHAI-0304FCZZ).

(3) Digital multimeter (or micro ammeter).

NOTE: The meter must have a measuring range of 0 to 100μ with a tolerance of ±1%

(2) The high voltage unit must be adjusted for any one of the following reasons:

(1) After replacement of the main or transfer high voltage unit.

(2) After replacement of the main or transfer corona unit.

(3) Corona output adjustment procedures:

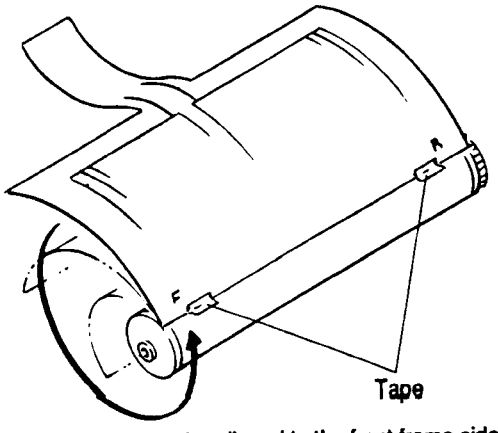
a. Main corona current adjustment

(1) Remove the developer unit, drum unit, main corona unit, and transfer corona unit from the copier.

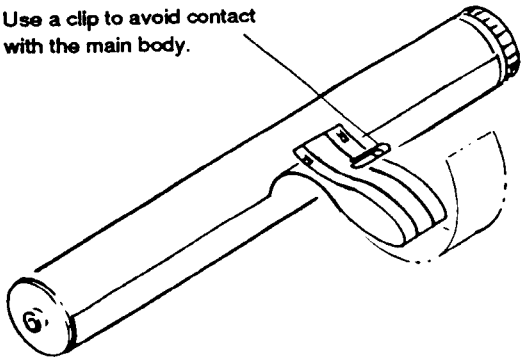
(2) Remove the discharge lamp.

Remove the cleaning blade from the drum holder.

(3) Install the DCD sheet and secure it on the drum using tape.

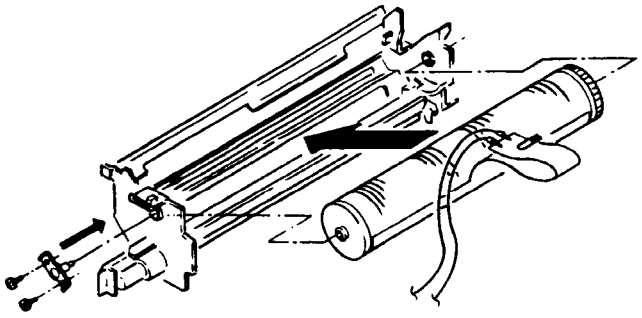


Must be aligned to the front frame side edge.

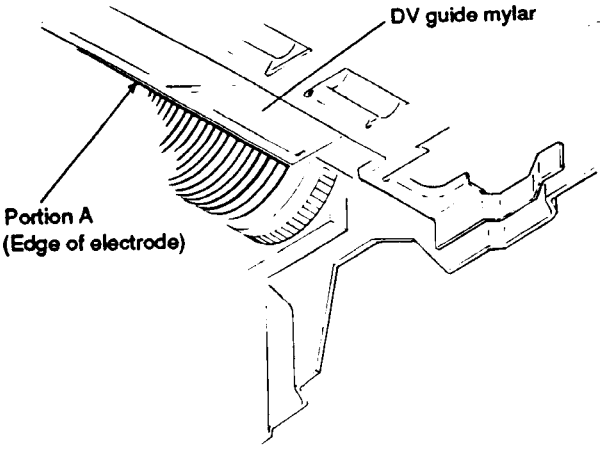


(4) Install the DCD installed drum on the drum unit.

Connect the harness.



(5) Install the drum unit in the copier with the cable extending out of the developer unit insertion slot and that the electrode sheet portion A in alignment with the DV guide mylar sheet.



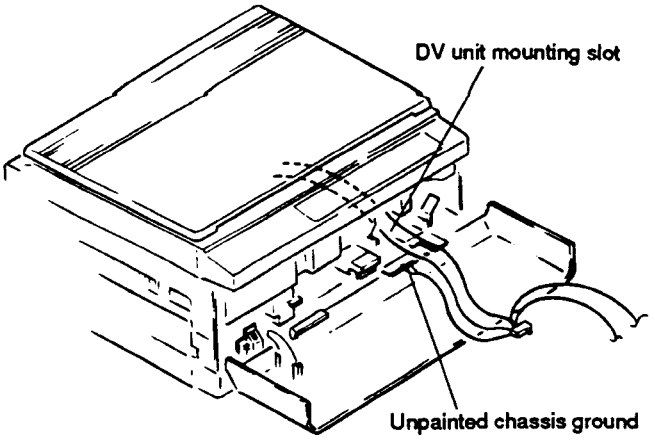
(6) Clean the main corona wire, and install the main corona unit in the drum unit.

Do not install the transfer corona unit or the developer unit, at this time.

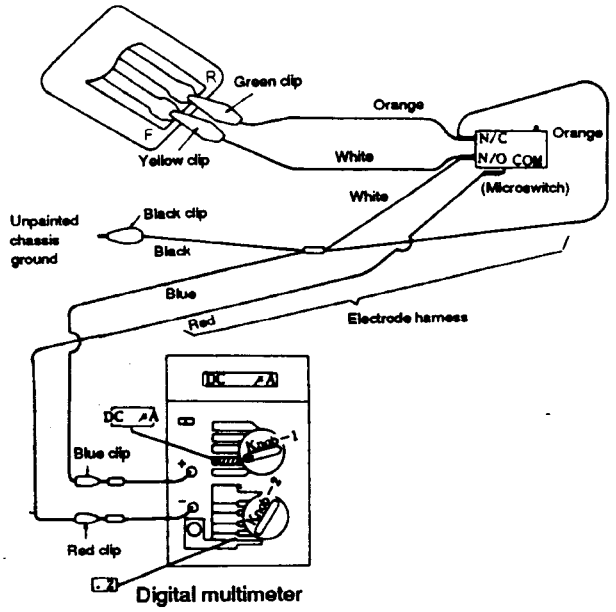
(7) Close the clam shell.

Turn on the cabinet switch with the corona cleaner.

(8) Feed the DCD harness through the developer unit mounting slot, and connect the test leads with the black clip to a good chassis ground.



(9) Connect the DCD test leads to the meter and the DCD sheet.



Digital multimeter
(UKOGE0019FCZZ)

IMPORTANT: Make sure that the black test lead is connected to a good chassis ground.

When the digital multimeter is used, connect the test leads as follows:

Red clip to the negative jack of the meter.

Blue clip to the positive jack of the meter.

And set the meter range as follows:

Knob-1 to DCmA range.

Knob-2 to 0.2.

When the ammeter is used, connect the test leads as follows:

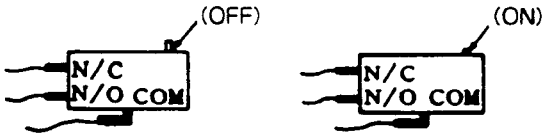
Red clip to the negative jack of the ammeter.

Blue clip to the positive jack of the ammeter.

(10) Measure the current at the front and rear frame sides. The current difference must be within 2.0μ.

a. Turn the main power on and enter test command 9. The main high voltage unit will activate for 30 seconds.

b. Measure the drum current at the front and rear frame sides.
- When the test harness microswitch is off, the front frame side current is indicated on the meter.
- When the test harness microswitch is on, the rear frame side drum current is indicated on the meter.



c. Make sure that a current difference is not greater than 2.0μ.

If the current difference is greater than 2.0μ, replace the corona unit.

(11) Adjust the MHVG output current.
- Turn the main power on and enter test command 9. The main high voltage unit will activate for 30 second.
- Adjust the MHVG output adjusting pot located on the high voltage unit so that the MHVG output current should be at 27±2μ.

b. Transfer corona output adjustment:

(1) Connect the DCD test leads to the meter, in reference to (3)-a-① to ⑥.

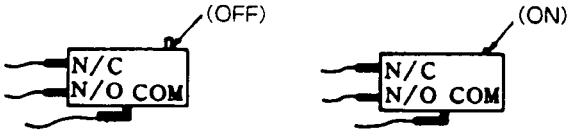
(2) Clean the transfer corona wire, and mount the transfer corona unit in the copier. The main corona unit may be mounted during the measurement.

(3) Perform the procedure (3)-a-① to ⑨.

(4) Measure the current at the front and rear frame sides. The current difference must be within 2.0μ.

a. Turn the main power on and enter test command 10. The transfer high voltage unit will activate for 30 seconds.

b. Measure the drum current at the front and rear frame sides.
- When the test harness microswitch is off, the front frame side current is indicated on the meter.
- When the test harness microswitch is on, the rear frame side drum current is indicated on the meter.

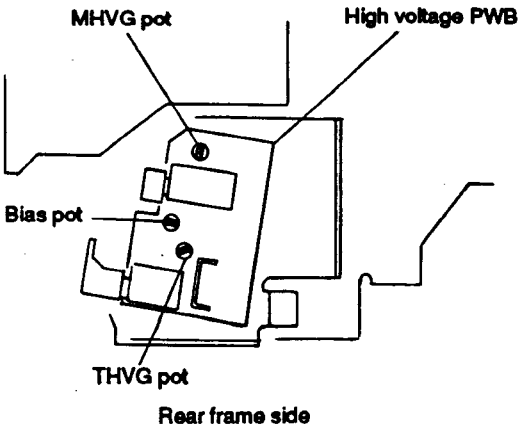


c. Make sure that a current difference is not greater than 2.0μ.

If the current difference is greater than 2.0μ, replace the corona unit.

(5) Adjust the THVG output current.
- Turn the main power on and enter test command 10. The transfer high voltage unit will activate for 30 seconds.
- Adjust the THVG output adjusting pot located on the high voltage unit so that the MHVG output current should be at 12.0 ±1.5μ.

C. Adjusting pot locations



[8] OPTICAL SYSTEM

1. Major parts replacement (mirror base related)

NOTE: Be sure to unfasten the power cord from the wall outlet before replacing the copy lamp thermal fuse.

A. Copy lamp

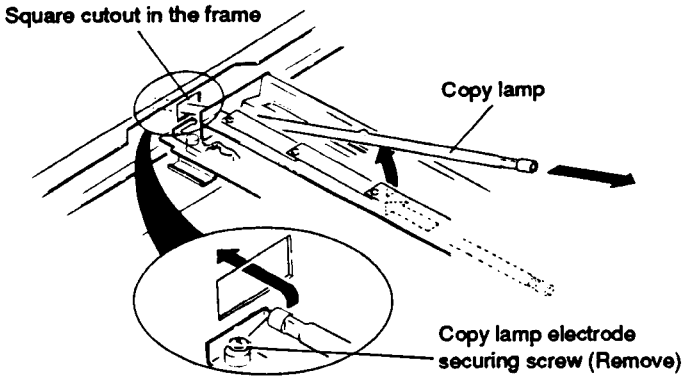
(1) Remove the glass holder.

Remove the table glass.

(2) Manually move the copy lamp unit to the square cutout in the frame.

(3) Remove screw that holds the copy lamp electrode on the front frame side.

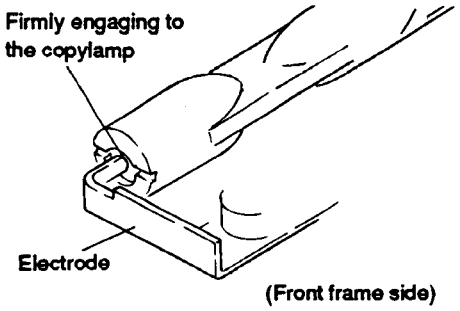
(4) Remove the copy lamp through the square cutout in the front frame (arrowhead).



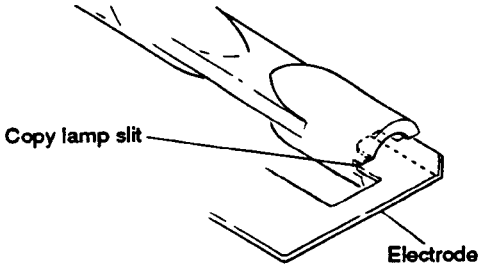
Installing the copy lamp

- Make sure that the electrode on the rear frame side is firmly engaged into the copy lamp slit.

  Also, make sure that the electrode on the front frame side is firmly engaging to the copy lamp.

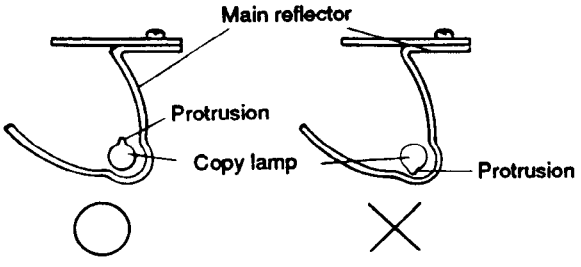


(Front frame side)



(Rear frame side)

- The copy lamp protrusion must face up when installed.

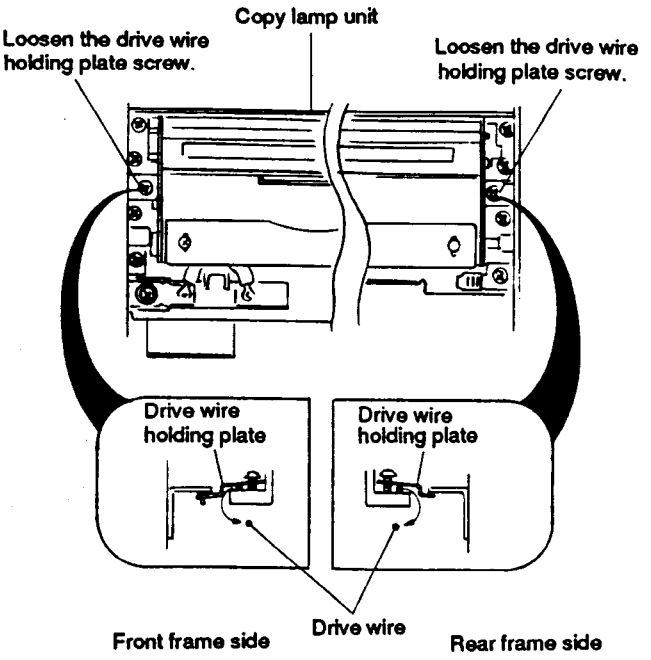


B. Copy lamp unit

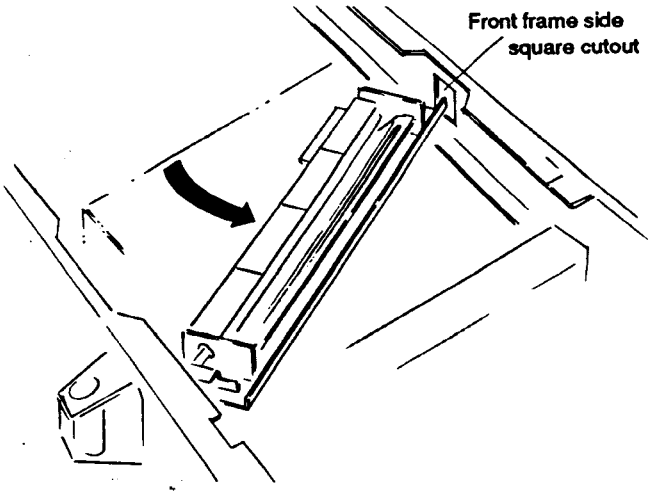
(1) Remove the table glass.

(2) Manually move the copy lamp unit to the cut in the frame.

(3) Loosen the drive wire holding screws on the front and rear frame sides and remove the drive wire from the copy lamp unit.



(4) Insert a corner of the copy lamp unit in the square hole in the front frame side and tilt it in the arrow direction to remove.



(5) Unfasten the copy lamp harness from the mirror base, optical baseplate, and frame (D-(4) to (6)).

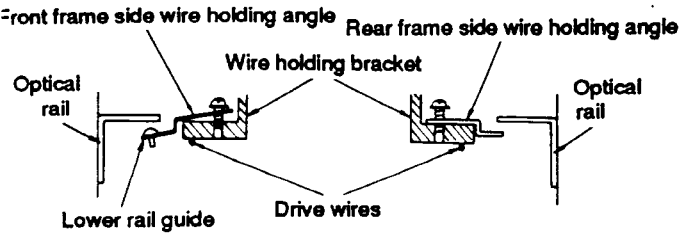
* The copy lamp unit comes supplied with the copy lamp harness.

Reverse the sequence to install the lamp unit.

While observing the following precaution.

- The lower side rail guide fixed to the front frame side wire holding angle and the rear frame side wire holding angle must be placed under the optical rail when mounting the copy lamp unit on the optical rail.

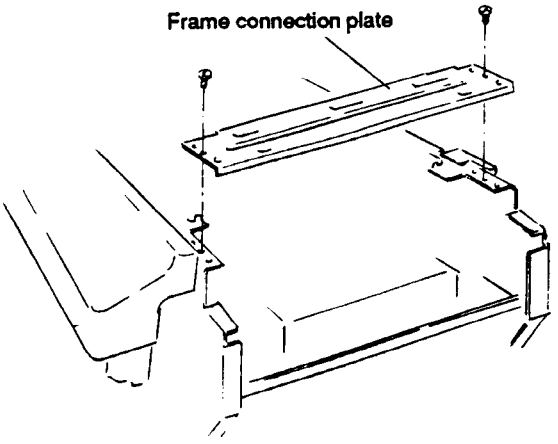
Drive wires must be placed under the wire holding brackets of the copy lamp unit.



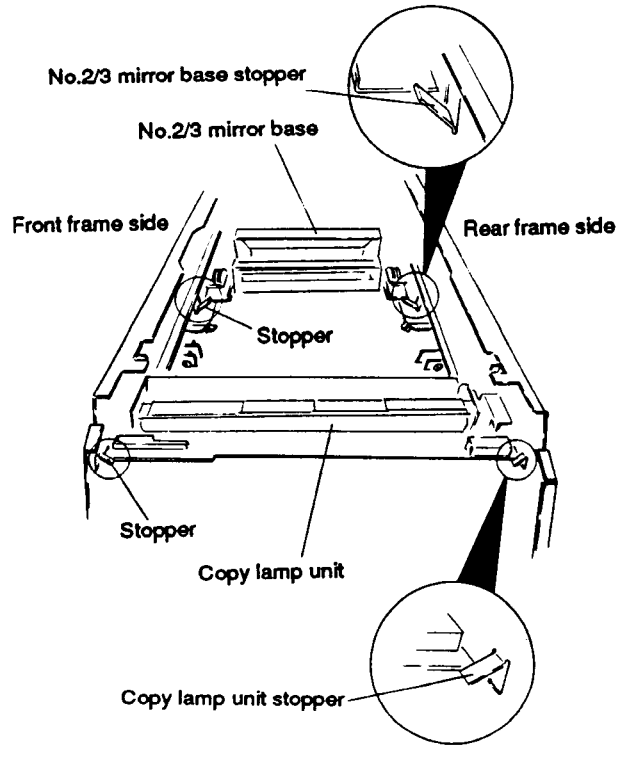
• Installing drive wires to the copy lamp unit

a. Place both front and rear frame side drive wires onto the slits of the wire holding bracket.

b. Remove the paper entry side frame connection plate.



c. Move the copy lamp unit and the 2/3 mirror base towards the paper entry side at the same time. Align the copy lamp unit and the 2/3 mirror base tact with the stoppers on both frame sides, then tighten the screws of the wire holding angles.



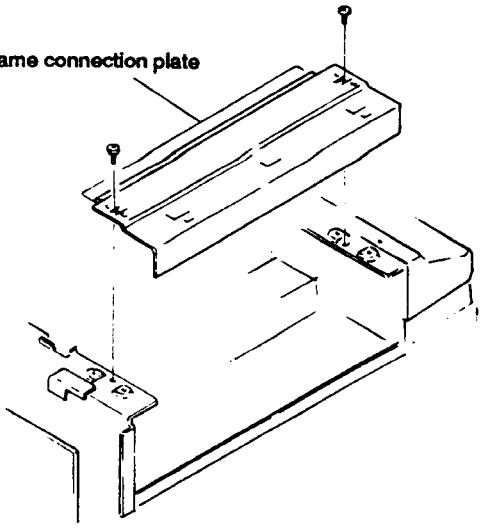
C. Mirror base drive wire

(Removing the wire)

(1) Remove the panels (rear side, paper exit side and operational).

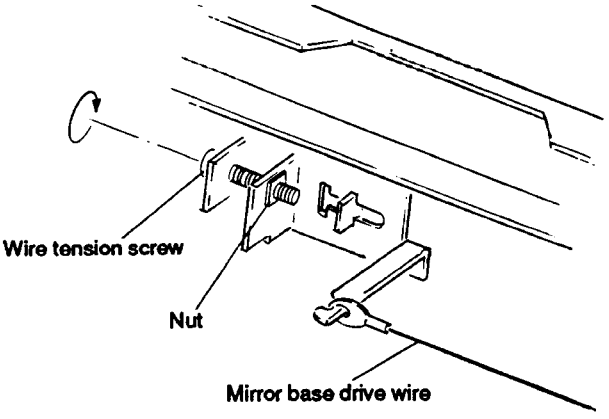
(2) Remove the table glass.

(3) Remove the paper exit side frame connection plate.



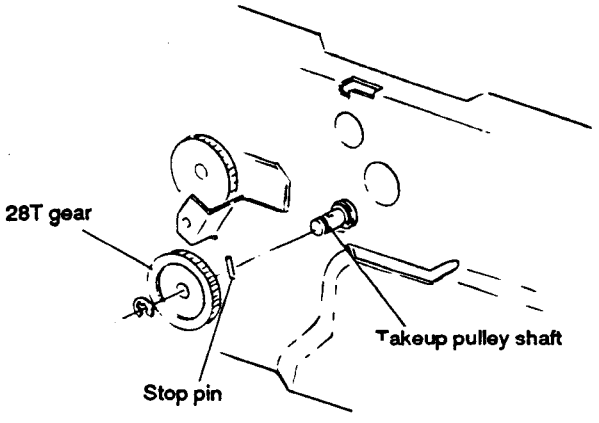
(4) Remove the copy lamp unit and the copy lamp lead guide, refer to B-(2) to (5).

(5) Loosen the nut of the mirror base wire tension spring on the side to be replaced. Rotate the tension screw counterclockwise to ease tension.



(6) Remove the clutch unit and the HV unit, refer to [13]-B and C.

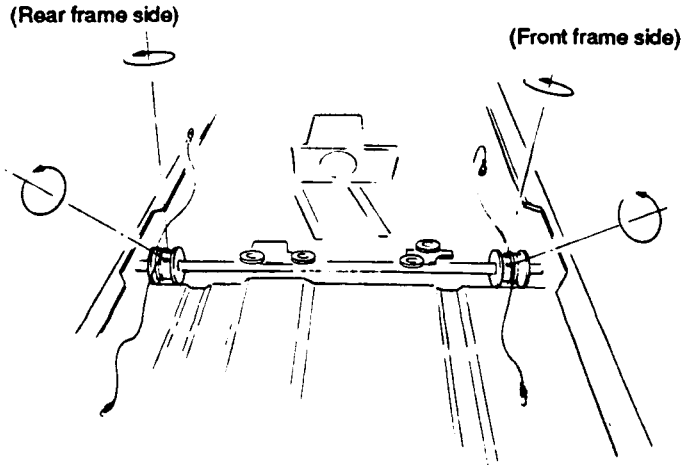
(7) Remove the rear frame side takeup pulley shaft 28T gear (stop pin).



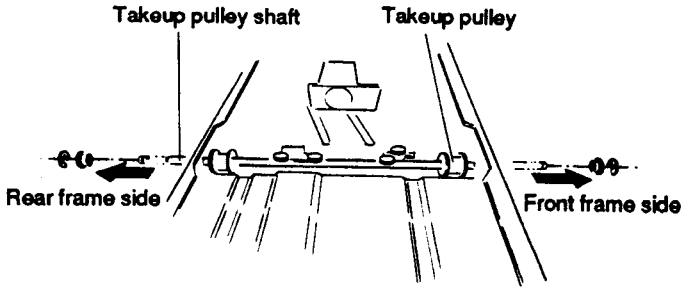
(Rear frame side)

(8) Remove both ends of the wire which is to be replaced.

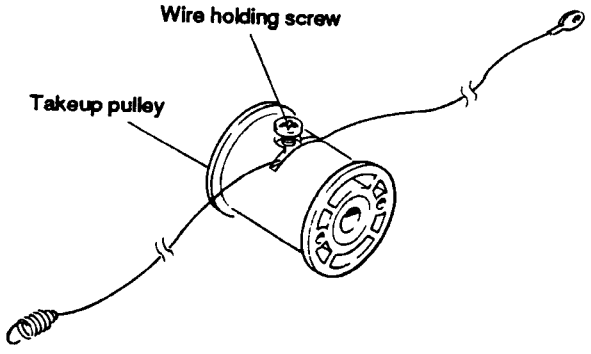
(9) Loosen four setscrews on the takeup pulley.



(10) Take out the takeup pulley shaft (two E-rings).

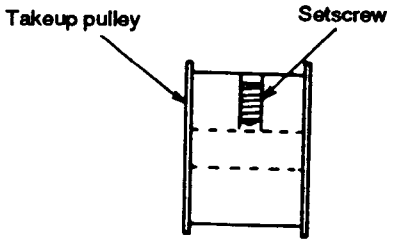


(11) Loosen the wire holding screw and remove the wire from the takeup pulley.



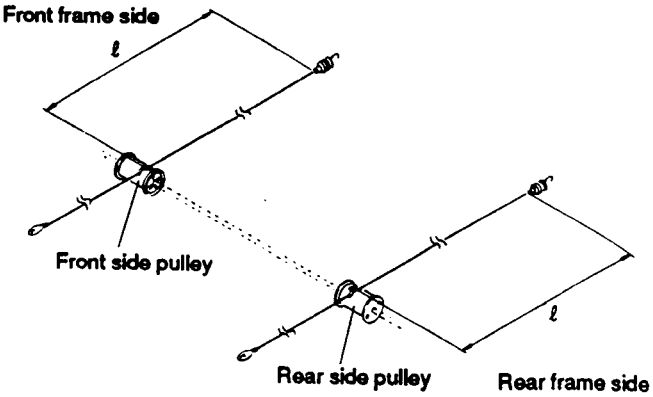
(Stretching wire)

(1) Make sure that the setscrew of the takeup pulley is not extending from the inside and outside of the pulley.

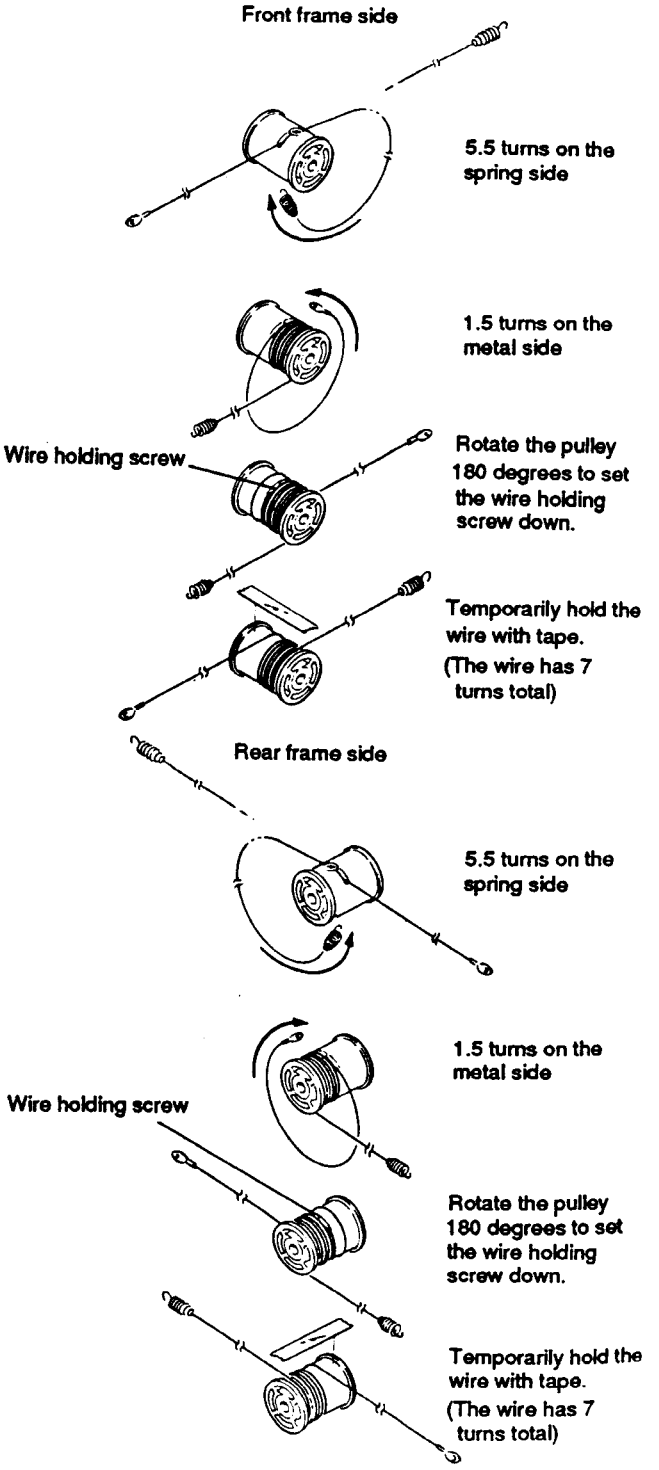


(2) Install the wire on the takeup pulley.

The length of the wire "ℓ" must be the same as the original wire and must be installed in the same direction.

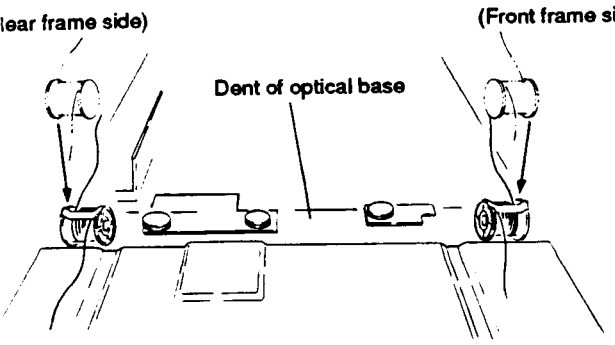


(3) Make turns of the wire around the takeup pulley and secure it with a tape.


Front frame side
5.5 turns on the spring side
1.5 turns on the metal side
Wire holding screw
Rotate the pulley 180 degrees to set the wire holding screw down.
Temporarily hold the wire with tape.
(The wire has 7 turns total)
Rear frame side
5.5 turns on the spring side
1.5 turns on the metal side
Wire holding screw
Rotate the pulley 180 degrees to set the wire holding screw down.
Temporarily hold the wire with tape.
(The wire has 7 turns total)

(4) Place the takeup pulley in the dent of the optical base as illustrated below and insert the takeup pulley shaft.

NOTE: The side of the shaft with the stop pin hole must be on the rear frame side.



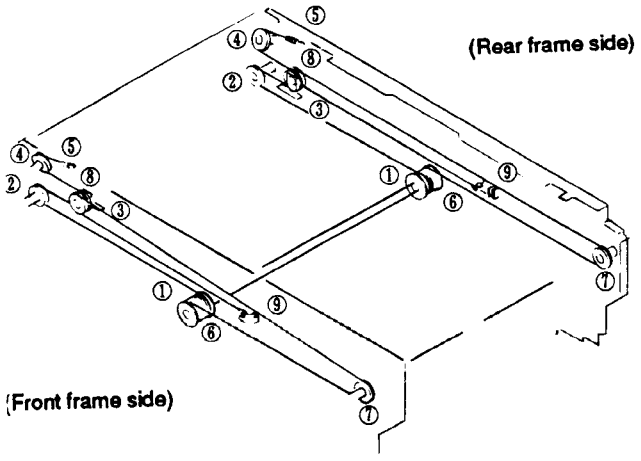
(5) Install the E-ring, stop pin, and 28T gear on the takeup pulley shaft.

(6) Move the No.2/3 mirror base unit towards the paper exit side.

(7) Route the mirror base drive wire as follows.

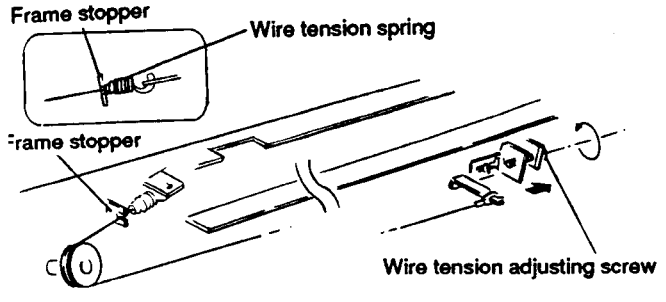
- Set the wire end with the tension spring at (1) and route it (2) thru (5).

  The spring must be hooked on the frame from underneath as shown.
- Route the other end of the wire in order of (6) thru (9).



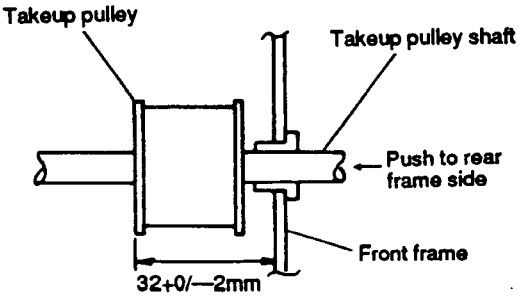
(8) Remove the tape used in step (3) to hold the wire.

- Rotate the mirror base tension wire adjusting screw clockwise to apply tension to the wire. Stop it when the edge of the wire tension spring comes in contact with frame stopper.



- Manually move the No.2/3 mirror base unit to assure that the mirror base wire spring end makes contact with the frame stopper. If not re-adjust with the adjusting screw. Insure that no wires cross each other on the mirror base pulley.

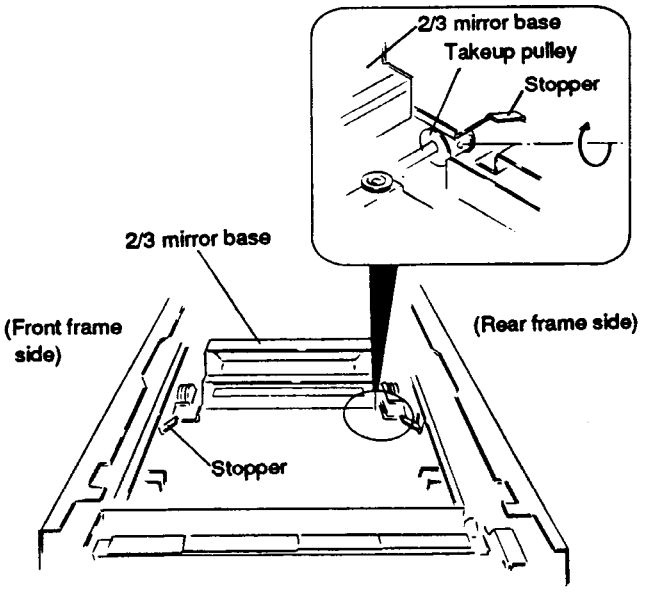
(9) Move the No.2/3 mirror base unit to the center of the machine and secure the front frame side takeup pulley on the pulley shaft.



NOTE: Do not damage the wire when fastening the setscrew.

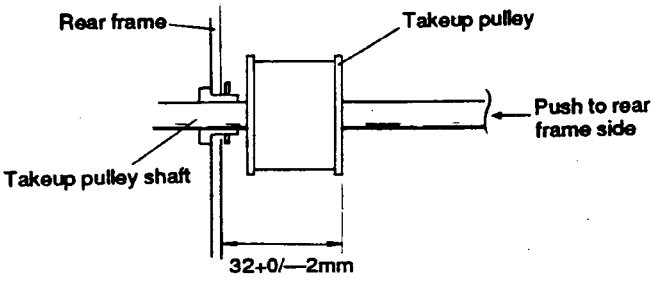
(10) Move the No.2/3 mirror base unit until the front frame side and the rear frame side contact the stopper at the same time. (See B-(5).)

(11) Tighten one rear frame side takeup pulley setscrew to secure it on the shaft. Move away the No.2/3 mirror base from the stopper and move it back again to see that it makes contact with the stopper at the same time as the front frame side.



(12) If (11) above was not satisfactory, loosen the setscrew on the rear frame side and repeat steps (10) and (11) until the both side make contact at the same time.

(13) Fasten another setscrew in the rear side takeup pulley.

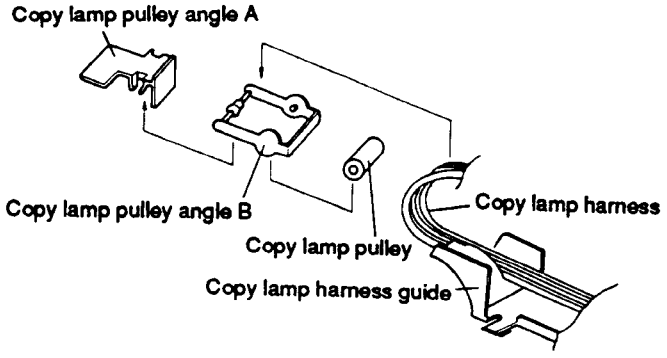


D. Replacing the copy lamp leads

(1) Remove the developer unit and the process unit.

(2) Remove the table glass.

(3) Remove the copy lamp pulley angle B from the copy lamp pulley angle A, and remove the copy lamp pulley angle B from the copy lamp harness.

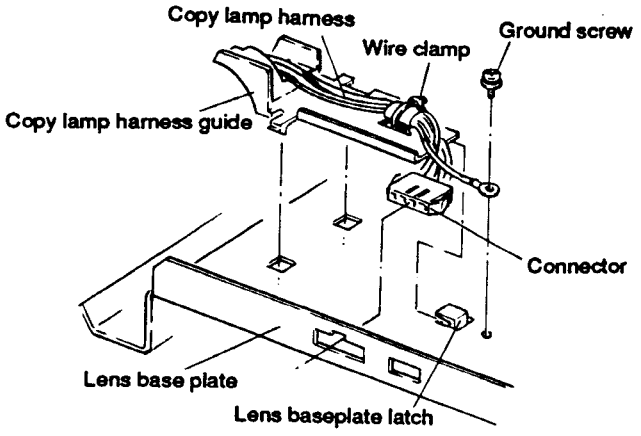


(4) Unfasten the front frame side connector.

Remove the copy lamp harness connector from the frame.

(5) Remove the copy lamp ground screw.

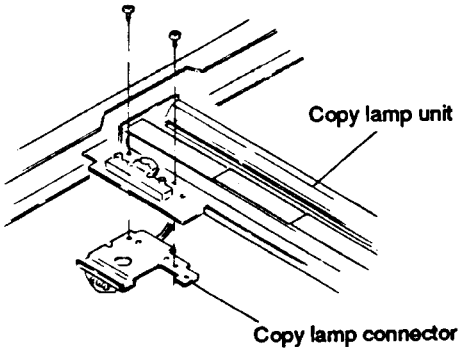
Remove the copy lamp harness guide from the lens baseplate.



(6) Remove the wire clamp.

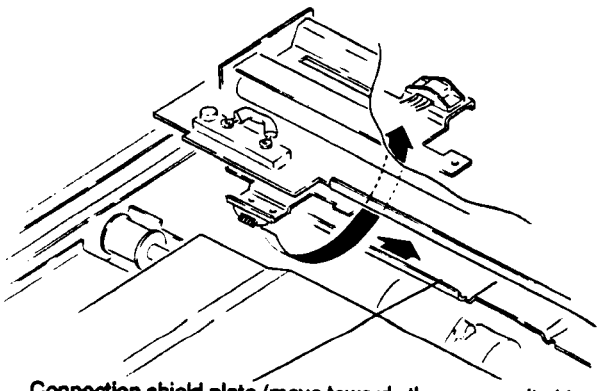
Remove the copy lamp harness from the copy lamp harness guide.

(7) Remove the copy lamp connector angle from the copy lamp unit.

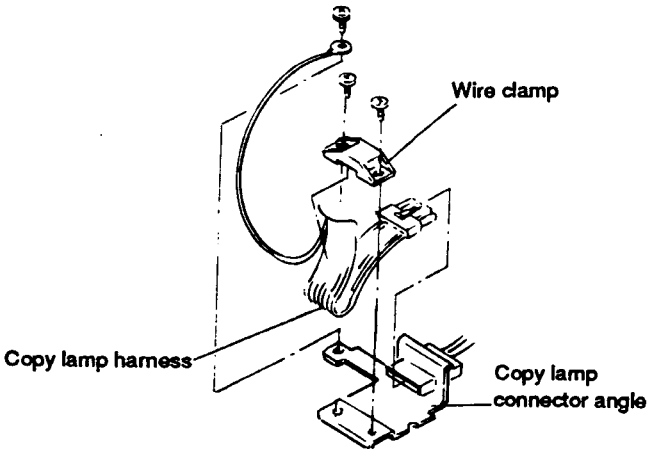


(8) Remove the connection shield plate holding screw and move the plate towards the paper eexit side, in reference to [8]-1-E-(4)-(5).

(9) Turn the copy lamp connector holding bracket upside down as shown in the figure.

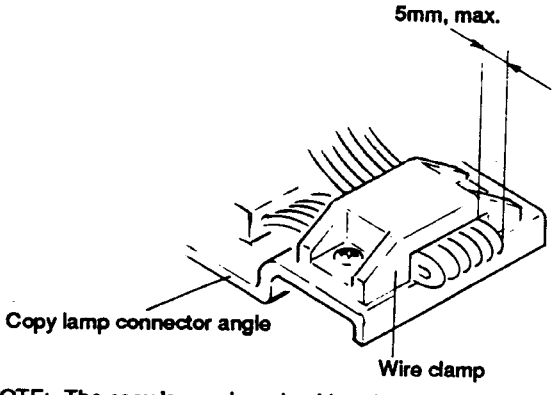


(10) Remove the copy lamp harness from the copy lamp connector.



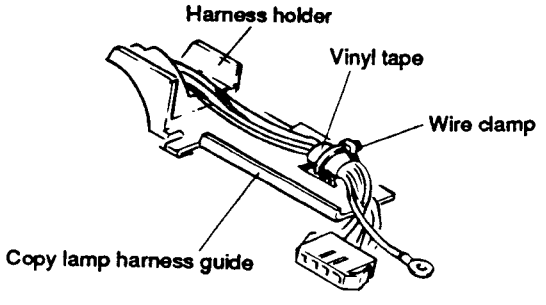
Reverse the sequence to re-assemble with the following precaution:

- The loopback portion must be within 5mm. The copy lamp harness must rest in the wire clamp groove.



NOTE: The copy lamp wires should not be seized.

- When installing the copy lamp harness on the copy lamp harness guide, the black taped portion of the copy lamp harness must be at the center of the wire clamp.
- The copy lamp harness must rest on the harness holder of the copy lamp harness guide.
- Check that the copy lamp harness does not contact the mirror

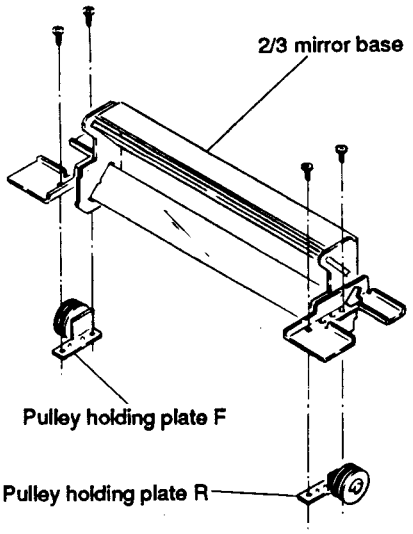


- Check that the copy lamp harness does not contact the mirror base drive wire.

E. No./2/3 mirror base unit

(1) Remove the mirror base drive wire. (See C-(1)–(8))

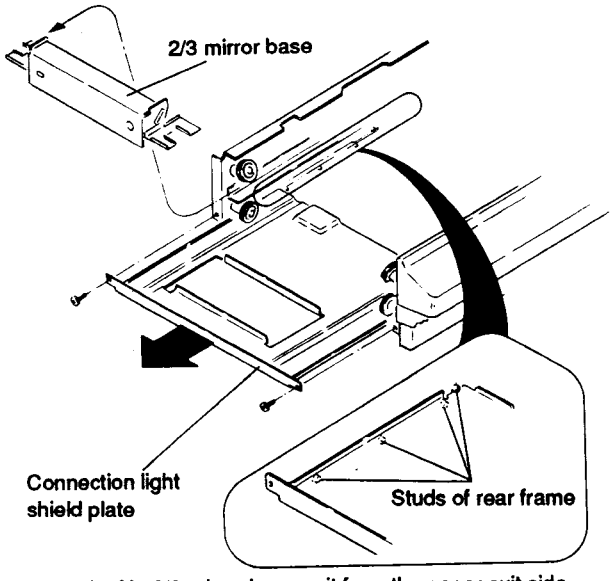
(2) Remove the pulley holding plates, F and R.



(3) Remove the connection plate from the paper exit side (See 1-C-(3)).

(4) Remove the main harness snap band from the connection light shield plate.

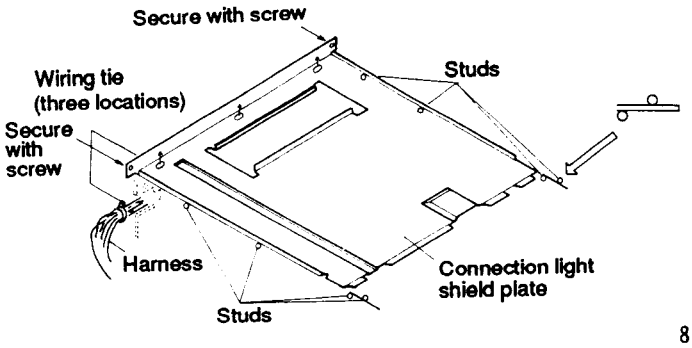
(5) Remove the connection light shield plate.



Remove the No.2/3 mirror base unit from the paper exit side.

Reverse the sequence to re-assemble, with the following precaution:

- The connection light shield plate must be inserted over the frame studs. The inner end of the light shield plate must rest between studs as shown.



2. Major parts replacement (lens base related)

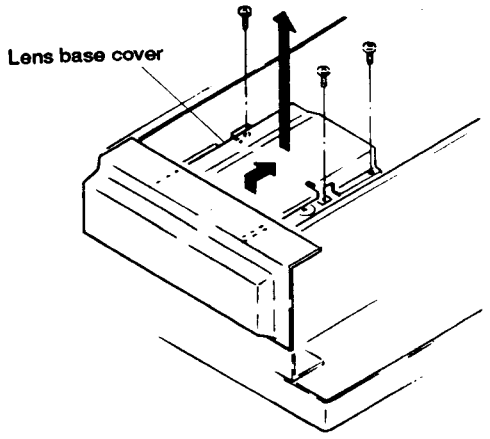
NOTE: For the drying heater is alive even if the power switch was turned off, it must be handled after unfastening the power cord from the wall outlet.

A. LPS

(1) Remove the table glass.

(2) Move the copy lamp unit towards the paper exit side.

(3) Remove the lens base cover (three screws).

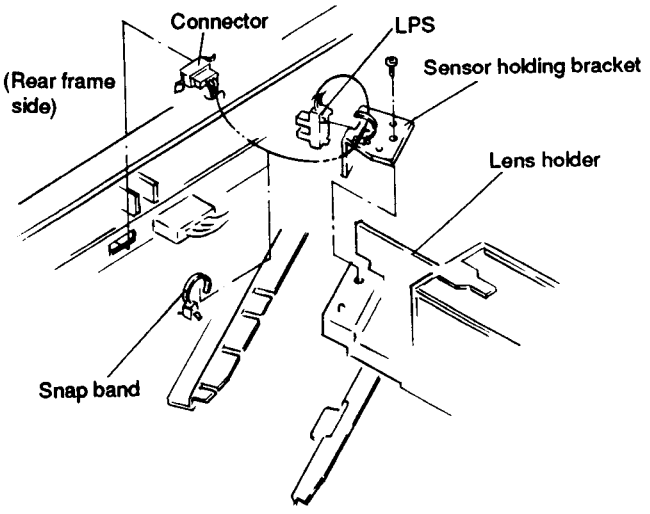


(4) Remove the operation panel.

Remove the connector.

(5) Remove the snap band.

Remove the LPS from the sensor holding bracket.



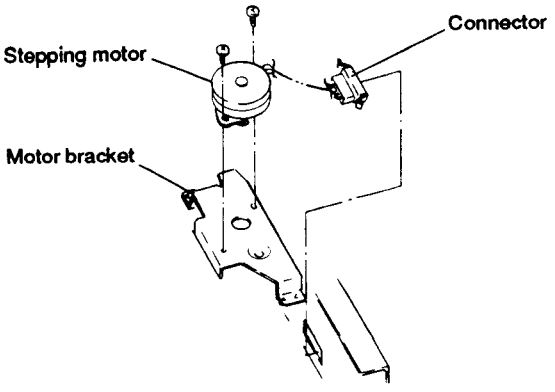
B. Stepping motor

(1) Remove the lens base cover.

(2) Remove the stepping motor from the motor bracket (two screws).

(3) Remove the connector from the frame.

(4) Unfasten the connector and remove the stepping motor.

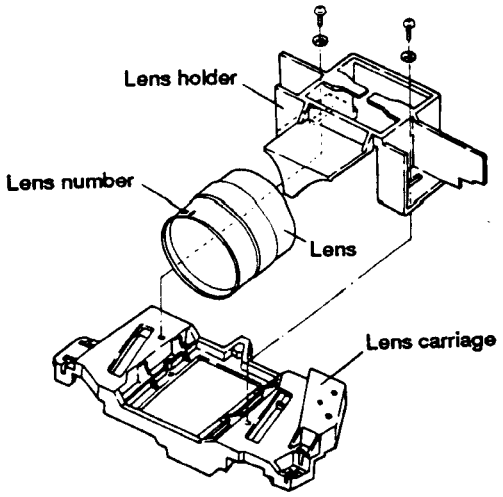


C. Lens

(1) Remove the lens base cover.

(2) Remove the lens from the lens carriage.

Remove the lens.



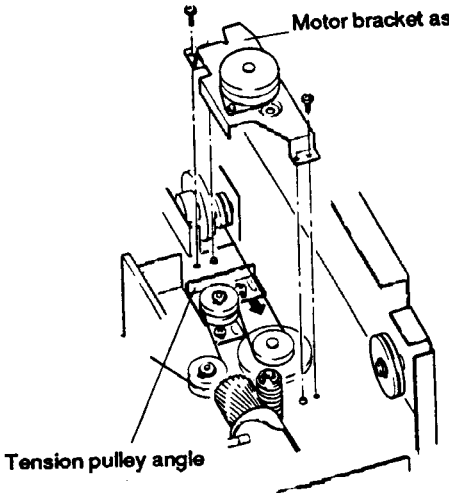
D. Lens drive wire (SF-7350 only)

(Removing the lens drive wire)

(1) Remove the lens base cover.

(2) Remove the motor bracket assy.

(3) Loosen the tension pulley angle holding screw and loosen the wire tension.

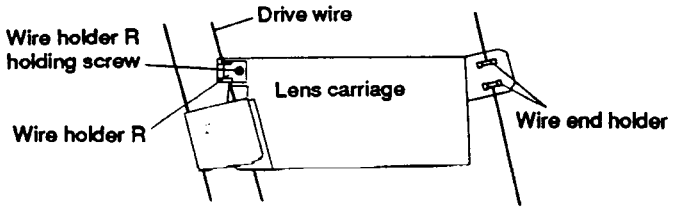


(4) Loosen the wire holder R holding screw.

Remove the wire from the lens carriage.

(5) Remove the wire end holder from the lens carriage.

(6) Remove the wire.



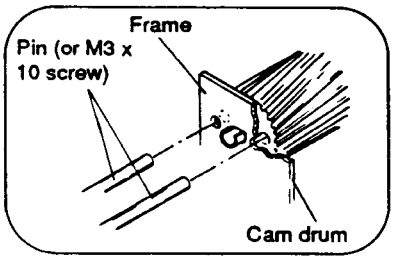
Stretching the lens drive wire (SF-7350 only)

* When replacing the drive wire, loosen the tension pulley holding angle screw to release tension.

(1) Move the lens carriage unit to the normal position (x1.0).

Match the LPS to the normal position of the slit plate.

(2) Insert two stop pins (M3 x 10 screw will do) in the cam drum.



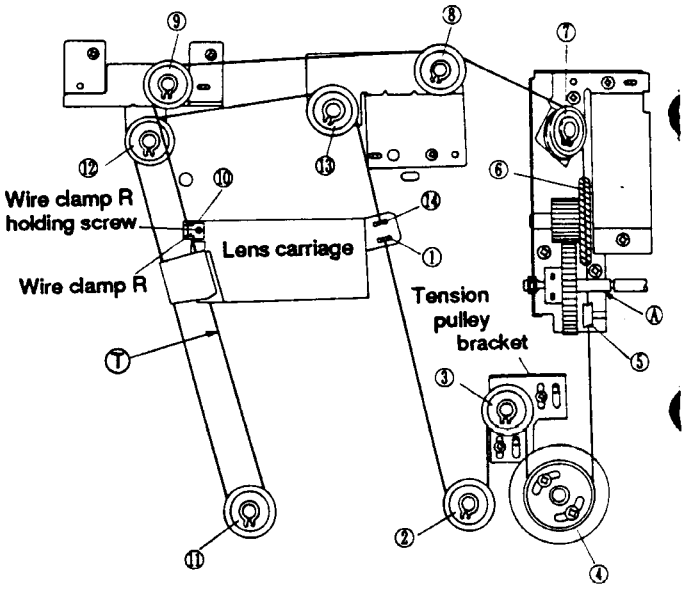
(3) Insert the wire through the section A. (Route through and under the clutch connection shaft.)

(4) Insert the metal end at the location of No.(1).

(5) Route the wire in order of No.(2) to No.(13).

At (10), insert the wire between the wire clamp R and the lens carriage wire holding bracket.

(6) Insert the end of the wire into No.(14).

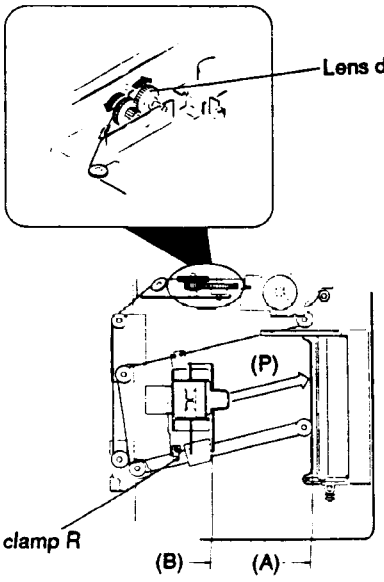


(7) Fasten the wire clamp R fingertight with screw.

(8) Remove the stop pin (screw) in the cam drum.

(9) Manually move the carriage towards the arrow direction (P), match the line (A) at the edge of a hole in the baseplate with the line (B) at the edge of the lens carriage, and fasten the wire clamp R screw.

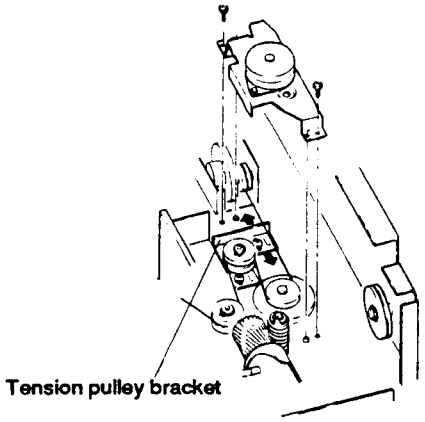
When the lens carriage is to be moved, hold the lens drive gear and do not hold the carriage itself.



(Tension and cam drum normal position adjustments are required after replacement or removal of the lens drive wire.)

e tension adjustment

- With the lens carriage unit in the normal position, push the marked portion of Ⓣ the wire (at the center between the lens carriage and the pulley) down with the tension gauge, and move the tension pulley bracket position so that the wire contacts the baseplate with 110±10 grams of tension.



m drum normal position adjustment

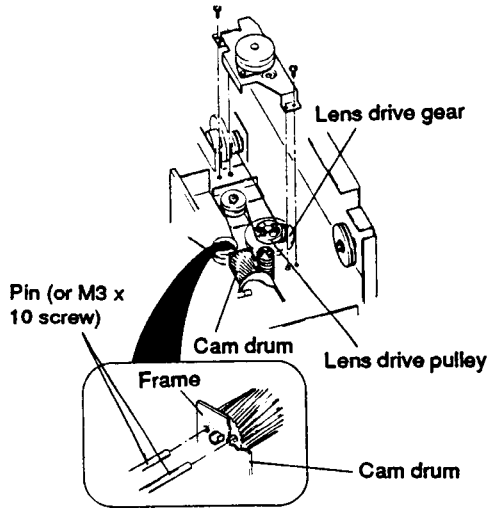
i) Move the carriage unit to the normal position. (Electrically)

i) Remove the stepping motor.

Loosen the screw that secures the lens drive gear to the lens drive pulley.

i) Rotate the lens drive gear until the hole in the frame aligns with the hole in the cam drum, then insert an M3 x 10 pin into the cam drum hole.

v) With the pin inserted, secure the lens drive gear and the lens drive pulley with the screw.



v) Remove the pin.

vi) Manually rotate the lens drive pulley to shift the lens carriage unit from enlargement to reduction and check that the wire does not disengage and that the lens carriage moves smoothly along with the No.4/5 mirror unit.

. Adjustment

)ptical system adjustments

. Exposure balance adjustment ... Adjust the exposure control plate.

. Resolution adjustment (partial area) ... Adjust the copy lamp unit location.

. Horizontal skew adjustment ... Adjust the parallelism of the No.2/3 mirror.

D. Vertical skew adjustment ... Adjust the height of the No.2/3 mirror.

E. Lens base unit adjustment ... Adjust the locations of the lens, No.4/5 mirror, slit plate, and cam guide.

Resolution adjustment (entire area)

Magnification ratio adjustment

Optical axis adjustment (center deviation)

F. Lens to clutch distance adjustment ... Adjust the location of the clutch connection gear 45T.

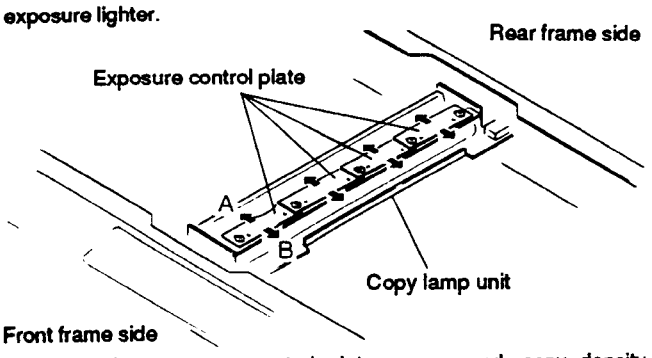
G. Copy lead edge adjustment ... Adjust using test command 50.

NOTE: Resolution must be checked after the No.2/3 mirror base parallelism adjustment.

A. Exposure balance adjustment

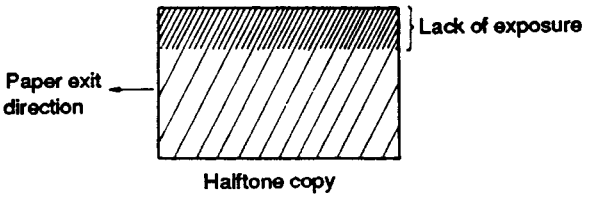
Make a half-tone copy on B4 (10" x 14") paper in the normal (1:1) mode, then adjust the exposure balance by moving the exposure control plate in direction A or B.

Direction A makes the exposure darker and direction B makes the exposure lighter.



NOTE: If the exposure control plate was moved, copy density needs to be adjusted.

Example: If the copy is like the one shown below, move exposure control plate in direction B to balance the exposure on the front frame side.



B. Resolution adjustment (partial)

For this adjustment the optical distance between the document and the drum is adjusted by changing the copy lamp unit location.

Adjustment is required for any of the following reasons:

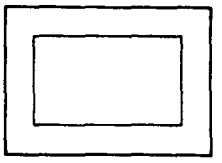
- After replacement of the mirror base drive wire
- After replacement of the copy lamp unit or No.2/3 mirror base
- When part of the copy is improperly focused.

1) Make a copy and check the area where the resolution is improper.
   - If resolution is off on the front frame side of the copy, change the location of the copy lamp unit on the rear frame side.
   - If resolution is off on the rear frame side of the copy, change the location of the copy lamp unit on the front frame side.
2) Remove the table glass
3) Loosen the drive wire bracket screw and change the location of the copy lamp unit, 1mm at a time.
4) Fasten the drive wire bracket screw and secure the copy lamp unit.
5) Replace the table glass and check the resolution.
6) If the resolution is not satisfactory, repeat above steps 1) thru 5).

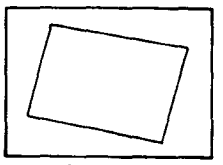
C. Vertical skew adjustment

This adjustment is required for any of the following reasons:

- After replacement of mirror base drive wire.
- After replacement of the copy lamp unit or No.2/3 mirror base.
- When a copy like the one shown below is produced.

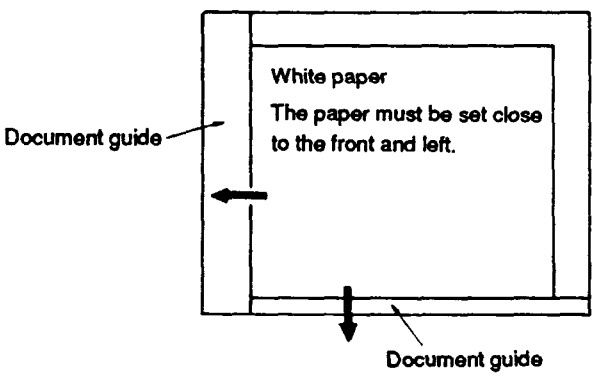


Original document



Copy

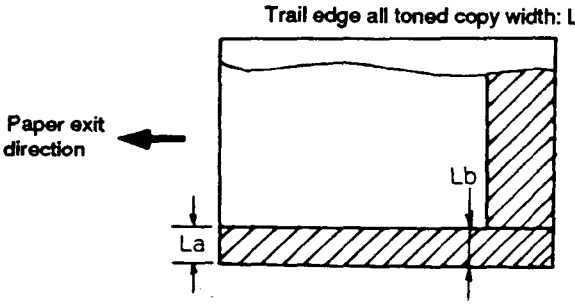
1) Use a sheet of A4 or 11" x 8-1/2" paper for an original and align it with to the document guide.



2) Make a copy on the B4 or 10" x 14" paper in the normal (x1.0) mode with the original cover open.
3) Measure the width of the toned area at the lead edge and trail edge of the copy.

Lead edge all toned copy width: La

Trail edge all toned copy width: Lb



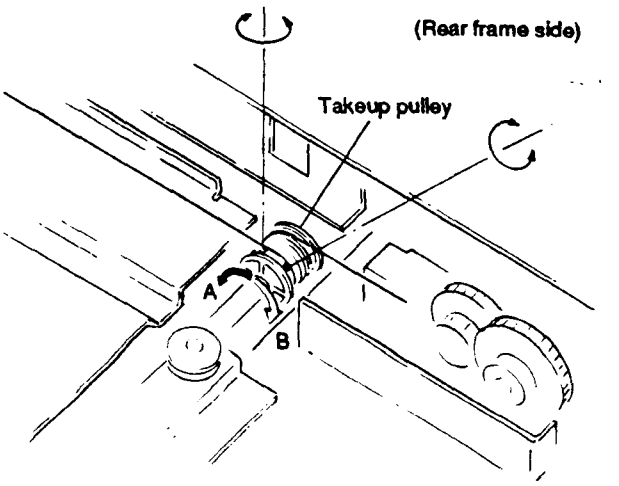
If the width of the lead edge toned area (La) is identical to the trail edge toned area (Lb), no adjustment is required.

If (La) is not identical to (Lb) then perform steps 4) thru 7).

4) Loosen the rear frame side take up pulley holding setscrew.

If La is greater than Lb, rotate the rear frame side takeup pulley in direction B without moving the takeup pulley shaft.

If La is not greater than Lb, rotate the rear frame side takeup pulley in direction A.



5) Tighten the setscrew of the takeup pulley and secure the takeup pulley on the takeup pulley shaft.
6) Repeat steps 1) thru 3).
7) If La is not equal to Lb, repeat steps 4) and 5).

Adjustment is complete if La equals Lb.

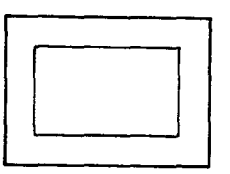
Repeat steps 1) thru 6) until La equals Lb.

D. Horizontal skew adjustment

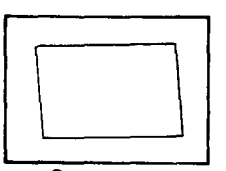
Horizontal skew is adjusted by varying the height of the front frame side of the No.2/3 mirror base rail.

Adjustment is required for any of the following reasons:

- After replacement of the mirror base drive wire.
- After replacement of the copy lamp unit or the No.2/3 mirror base.
- After replacement of the No.2/3 mirror base rail or its position.
- When a copy like the one shown below is produced.



Document

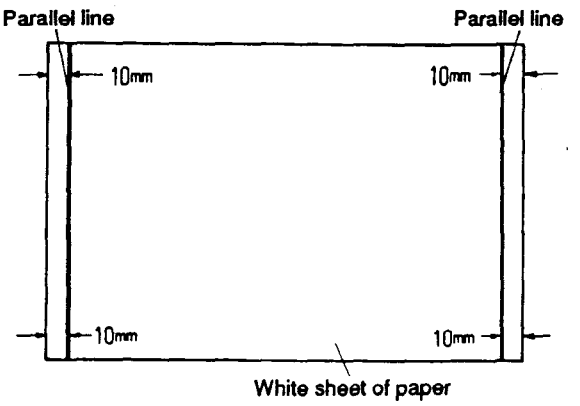


Copy

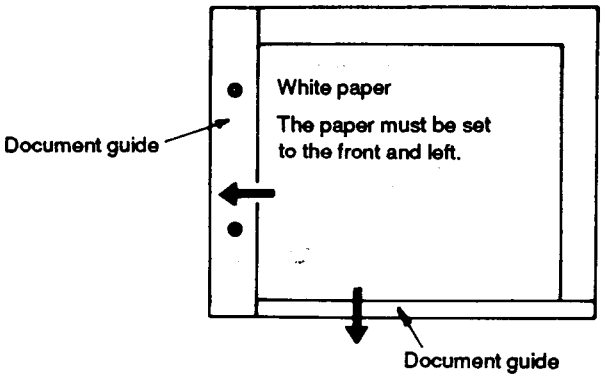
1) Prepare a document for adjustment.

Prepare a sheet of B4 (10" x 14") paper for a document and draw a parallel line 10mm from the lead edge and trail edge.

This has to be exact.

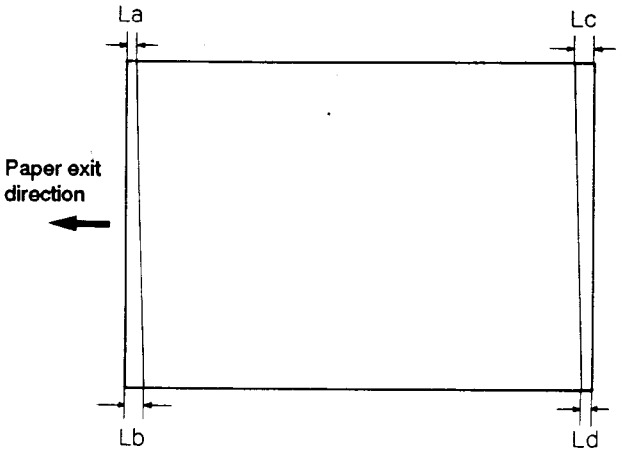


2) Place the document on the document table.



3) Make a copy in the normal mode.

4) Measure the distance at La and Lb, and Lc and Ld.



If La equals Lb and Lc equals Ld, there is no need to adjust the mirror base.

5) Move the No.2 mirror base rail location up or down to adjust.

If La is greater than Lb:

Shift the paper exit side No.2 mirror base rail up half the distance between La and Lb.

If La is not greater than Lb:

Shift the paper exit side No.2 mirror base rail down half the distance between La and Lb.

(Example):

If La is 12mm and Lb 9mm, shift the paper exit side No.2 mirror base rail 1.5mm up.

(La — Lb) / 2 = (12 - 9)/2 = 1.5

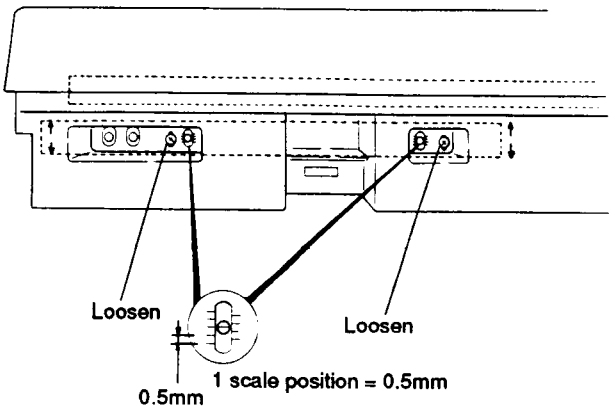
If Lc is greater than Ld:

Shift the paper entry side No.2 mirror base rail up half the distance between Lc and Ld.

If Lc is not greater than Ld:

Shift the paper entry side No.2 mirror base rail down half the distance between Lc and Ld.

If La ≠Lb and Lc ≠Ld then proceed to next step.



6) Repeat steps| 2) and 3).

7) If La is not equal to Lb and Lc to Ld, repeat steps 2) thru 5), until La becomes equal to Lb and Lc to Ld.

8) Manually rotate the mirror base drive pulley to insure that the mirror bases do not contact each other.

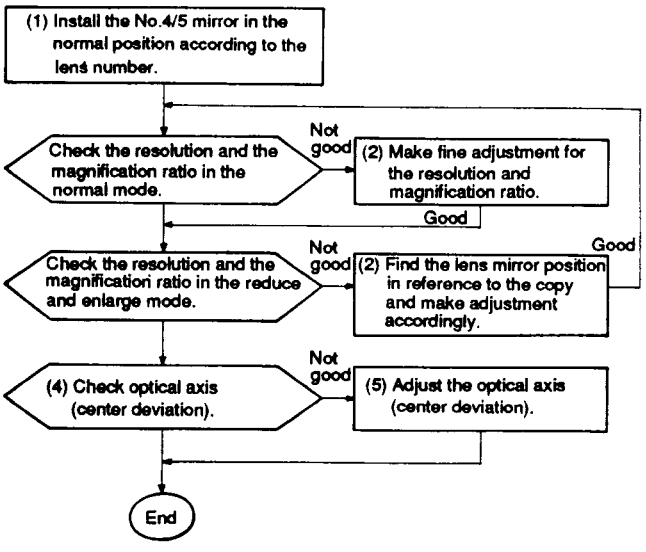
NOTE: Move the mirror base rail carefully to prevent possible damage to the mirror bases.

E. Lens base unit adjustments

Adjustment is required for any of the following reasons:

- After replacement or removal of a lens base unit component.
- When the proper resolution is not produced over the entire copy area.
- When a magnification error is encountered.
- When center deviation is incorrect.

Adjustment procedure


(1) Install the No.4/5 mirror in the normal position according to the lens number.
Check the resolution and the magnification ratio in the normal mode.
Not good
(2) Make fine adjustment for the resolution and magnification ratio.
Good
Check the resolution and the magnification ratio in the reduce and enlarge mode.
Not good
(2) Find the lens mirror position in reference to the copy and make adjustment accordingly.
Good
(4) Check optical axis (center deviation).
Not good
(5) Adjust the optical axis (center deviation).
End

Flow chart description

(1) Lens, No.4/5 mirror normal mode locations (SF-7350)

(A). Position of the lens in the normal mode is as follows.

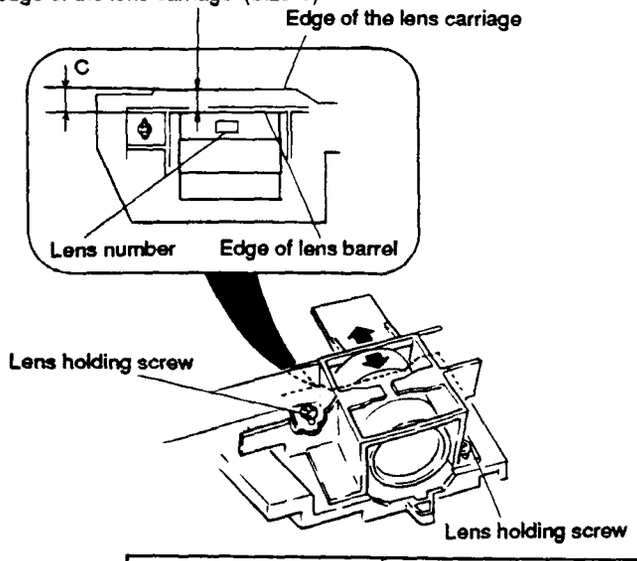
a) Between the lens carriage and lens

b) Between the lens carriage and the baseplate

a) Between the lens carriage and the lens

Install in the following location according to the lens number.

Distance between the edge of the lens barrel and the edge of the lens carriage (Size C)

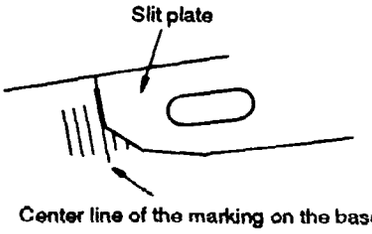


Lens number	Size C (mm)
17.0	12.5
16.5	12.25
⌇	⌇
11.0	9.5
10.5	9.25
10	9
9.5	8.75
9.0	8.5
⌇	⌇
3.5	5.75
3.0	5.5

b) Between the lens carriage and the baseplate

The normal (x1.0) position of the lens carriage is dependent to the slit plate.

For any lens number, the marking on the baseplate must match the center line of the slit plate when the slit plate is initially installed.



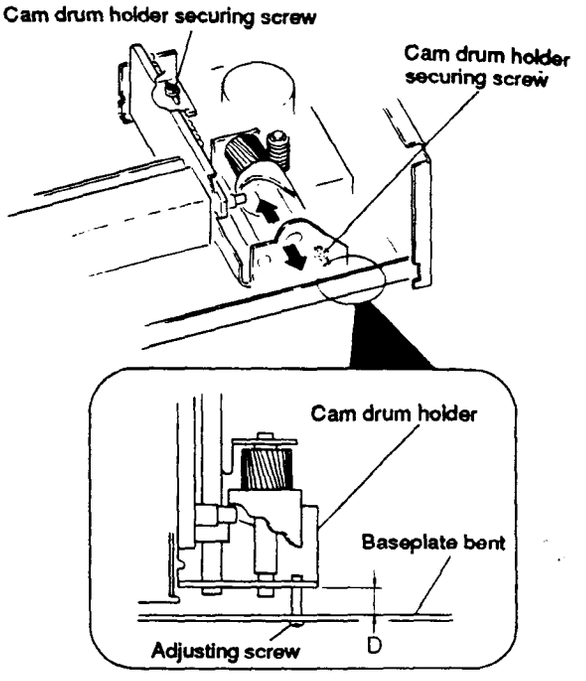
Make an actual copy and check the magnification ratio.

If not satisfactory, shift the slit plate to adjust.

One scale position changes the magnification ratio 0.5%.

(B). No.4/5 mirror normal (x1.0) position

The position of the No/4/5 mirror in the normal (x1.0) mode must be adjusted by the distance between the bend in the baseplate and the cam drum holder (fine adjustment).

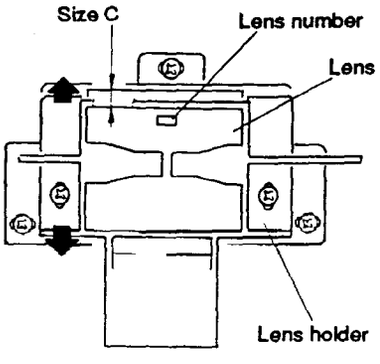


Lens number	Size D (mm)
17.0	5.0
16.5	5.25
⌇	⌇
11.0	8.0
10.5	8.25
10	8.5
9.5	8.5
9.0	9.0
⌇	⌇
3.5	11.75
3.0	12

Lens and No.4/5 mirror normal (x1.0) mode location (SF-7300)

(A): Lens

Adjust the distance between the lens and the lens holder according to the lens number. (Size C)



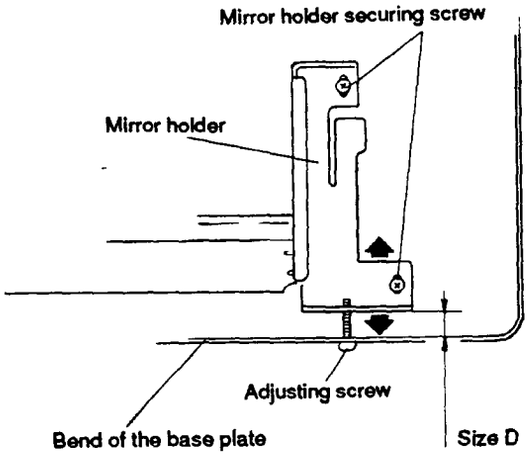
Size C (SF-7300)

Lens number	Size C (mm)
17.0	10.5
⌇	⌇
11	7.5
10.5	7.25
10	7
9.5	6.75
9.0	6.5
⌇	⌇
3.0	3.5

No.4/5 mirror

Adjustment must be done by the distance between the bend of the baseplate and the mirror holder according to the lens number (Size D).

TE: Relationship between the lens number and the dimension D is identical to the SF-7350.



) Resolution and magnification ratio fine adjustment (SF-7350)

) Resolution

Loosen the cam drum holder securing screw.

Adjust by means of the No.4/5 mirror adjusting screw in reference to the resolution of the copy. See E-(1)-(B).

) Magnification ratio

Use test command 48.

(SF-7350 only)

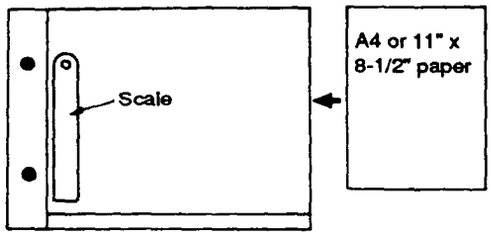
Used to adjust the magnification ratio in the longitudinal direction of the copy.

By changing the lens home position in the normal mode, the magnification ratio in the longitudinal direction of the copy (across the front and rear frame sides) can be adjusted.

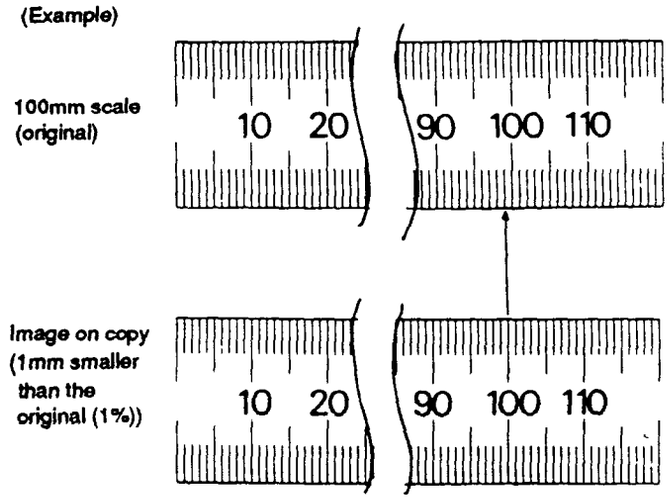
Method:

1) Place a scale across both frame sides of the original table and make a copy in the normal mode to obtain the magnification ratio compensation value.

Magnification ratio = (original size - copy image size) / (original size) x 100



(Example)



Longitudinal copy magnification ratio =
100 - 99 / 100 x 100 = 1 [%]

2) Execute test command 48.

C → % → % → C → 4 → 8 → PSW

As the ready lamp turns on, the previously stored figure (2 to 6) is displayed. Find the magnification ratio and compensation value in the table.

(Input figure) = (previously stored figure) + (compensation factor)

When the PSW is pressed after entry of a new figure, the figure is stored in the memory and the ready lamp goes out.

Since it is not possible to adjust the magnification ratio with this test command for a figure less than 2 or greater than 6, the lens base slit plate needs to be moved towards the paper entry side if smaller than 2 or towards the paper exit side if greater than 6 before making adjustment.

Magnification ratio [%]	Compensation value
.52 to .65	4
.37 to .51	3
.23 to .36	2
.08 to .22	1
—.07 to .07	0
—.08 to —.22	—1
—.23 to —.36	—2
—.37 to —.51	—3
—.52 to —.65	—4

Example

Magnification ratio	Compensation factor	Previously stored value	Input value
+0.5	+3	2	5
—0.25	—2	6	4
—0.5	—3	3	(Move to the lens base slit paper entry side)

3) Make a copy in the normal mode and compare the size of the scale image on the copy with the actual scale.

Push the CLEAR key to cancel test command.

4) If the size of the scale image on the copy equals the actual scale size, the adjustment has been complete.

If not, repeat steps 1) thru 3) until successful adjustment is attained.

5) Cancel test command 48 by pushing the CLEAR key twice.

Resolution and magnification ratio fine adjustment (SF-7300)

(A) Resolution

Loosen the No.4/5 mirror holder holding screws.

Adjust the No.4/5 adjusting screw in according to the resolution on the copy.

(B) Magnification ratio

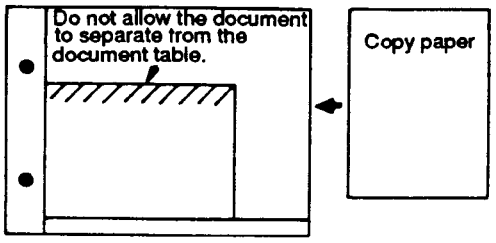
Adjustment is not required because the magnification ratio should be within limits when the resolution is correct.

(3) Enlargement and reduction mode focus and magnification ratio adjustments

If the focus and magnification ratio are within the limits, the focus and magnification ratio will also be within the limits in the enlarge and reduce modes.

(4) Optical Axis (center deviation) check-out procedure

1) Place a white sheet of B5 (8-1/2" x 5-1/2") on the document table as shown below. (landscape)

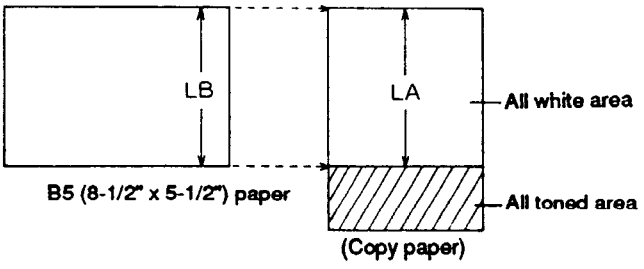


2) Insert an B5 (8-1/2" x 5-1/2") copy paper in the machine. (portrait)

3) Make a copy in the normal mode with the original cover open.

NOTE: Do not allow the hatched portion of the document to lift from the table surface.

4) Compare the length LB with the length LA of the copy paper.



(5) Optical axis (center deviation) adjustment

(SF-7350)

Adjustment must be done by means of the cam guide.

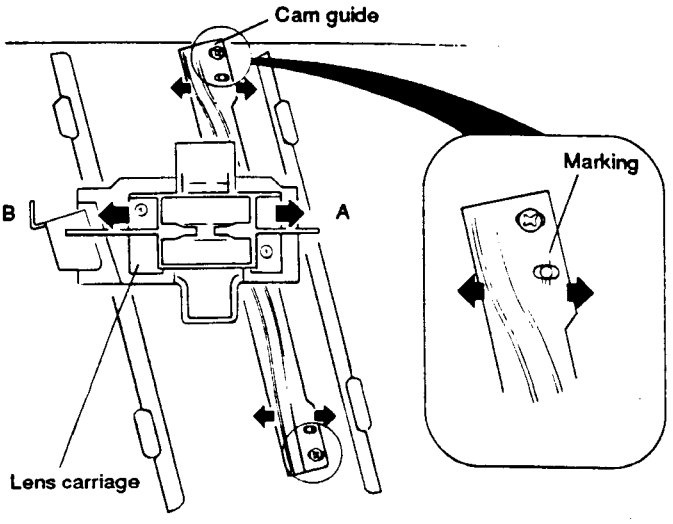
Make the adjustment by referring to the center of the protrusion on the baseplate with the marking on the cam guide.

One scale position will vary the optical axis 2mm in the normal mode (x1.0).

Adjustment is not required if LA - LB is smaller than 2.0mm.

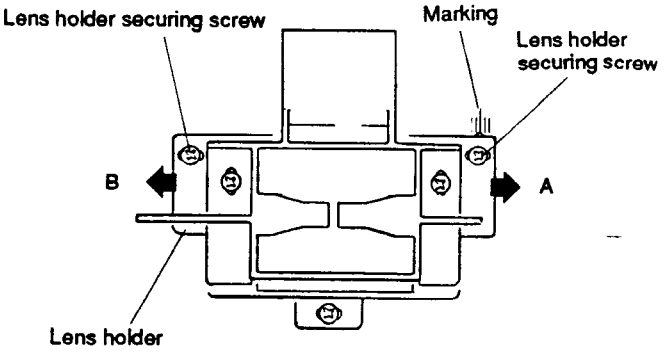
Shift the lens carriage towards the rear frame side (direction A), if LA - LB is greater than 2.0mm.

Shift the lens carriage towards the front frame side (direction B), if LA - LB is smaller than 2.0mm.



(SF-7300)

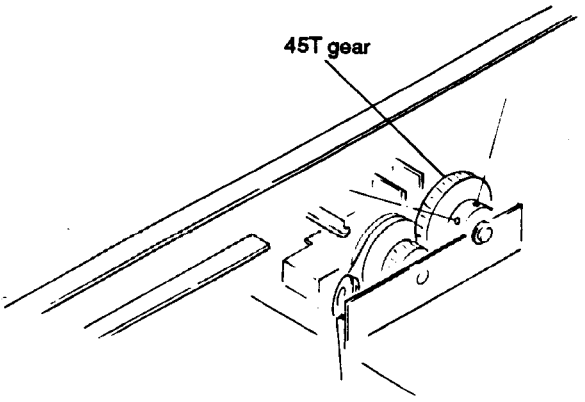
Adjust the location of the lens holder.



F. Adjusting engagement of the clutch connection gear with the clutch speed shift gear

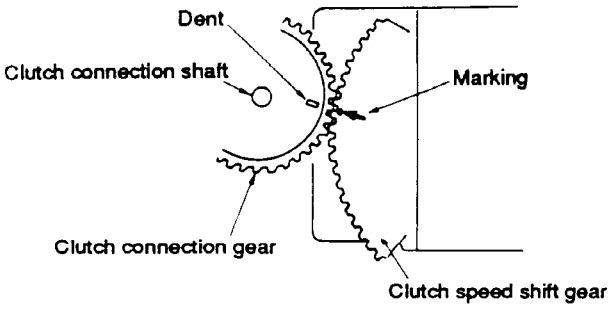
If the position of the lens should deviate after replacing the lens or wire, the distance between the lens and the clutch needs to be adjusted in the following manner:

1) Loosen the clutch speed shift 45T gear holding two setscrews.

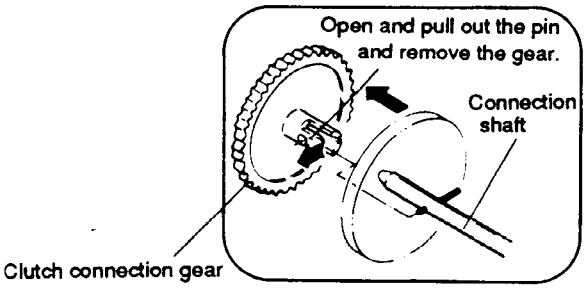


2) Move the lens to the normal (x1.0) position. (Electrically)

3) Match the indented part of the clutch connection gear with the arrow mark position of the clutch speed shift gear, and fasten the 45T gear with the M3 setscrew.



(Removing the clutch connection gear)



3. Copy lead edge image location adjustment

(1) Place a scale against to the document lead edge guide.

(2) Execute test command 50.

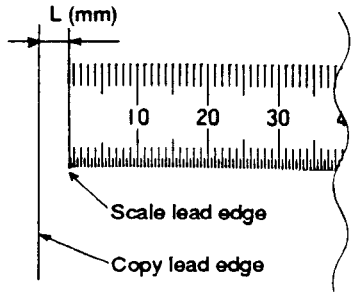
C → % → % → C → 5 → 0 → PSW

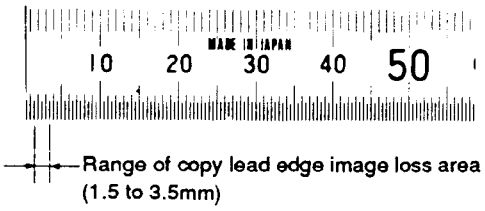
(3) Adjusting the copy lead edge image location.

When this test command is executed, the machine starts to warm up with the currently used lead edge adjustment value on display. In the case of the SF-7350, the lens base moves to the normal position. When the machine is ready for operation, set the lead edge adjustment value to "0" and push the PSW to make a copy. Measure the distance (L) from the copy lead edge image area to the lead edge of the copy paper. Now, obtain the lead edge adjustment value (RRS) with the following formula.

RRS = L x 4.35 + 10.87 (fraction must be rounded)

Enter the PSC value obtained and push the PSW. The entered figure is stored in the memory and a copy is produced. Check the copy for a lead edge image loss of 2.5±1mm.





(4) To cancel the test command 50, push the CLEAR key.
To set the lead edge adjust value for each magnification ratio for the SF-7350, enter the lead edge adjust value based on the normal mode (x1) lead edge adjust value.

(Procedure)

(5) Short pin 1 with pin 3 of the connector CG located on the main PWB.

(6) Execute test command 59.
C → % → % → C → 5 → 9 → PSW

(7) Push the magnification ratio select key twice. The x0.8 indicator will come active, then.

(8) Enter the value given for x0.8 in the table, then push the PSW.

(9) When the CASSETTE FEED indicator came active, push the magnification ratio select key just once. The x0.7 indicator will now come active.

(10) Enter the value given for x0.7 in the table, then push the PSW.

(11) When the CASSETTE FEED indicator came active, push the magnification ratio select key just once. The x1.24 indicator will now come active.

(12) Enter the value given for x1.24 in the table, then push the PSW.

(13) When the CASSETTE FEED indicator came active, undo the short of the pin 1 with the pin 3 of the connector CG.

(14) Push the CLEAR key twice to cancel test command.

Ex. Normal magnification ratio lead edge adjust value (35)

0.8 → 26
0.7 → 21
1.24 → 47

Lead edge adjust value for each magnification ratio. (AB series)

SF-7350 only

x1.0	10	11	12	13	14	15	16	17	18	19
x0.8	6	7	8	8	9	10	11	12	13	13
x0.7	3	4	4	5	6	7	7	8	9	9
x1.24	16	18	19	20	21	23	24	25	26	27

x1.0	20	21	22	23	24	25	26	27	28	29
x0.8	14	15	16	17	17	18	19	20	21	21
x0.7	10	11	11	12	13	14	14	15	16	16
x1.24	29	30	31	32	34	35	36	37	39	40

x1.0	30	31	32	33	34	35	36	37	38	39
x0.8	22	23	24	25	25	26	27	28	29	29
x0.7	17	18	18	19	20	21	21	22	23	23
x1.24	41	42	44	45	46	47	48	50	51	52

x1.0	40	41	42	43	44	45	46	47	48	49
x0.8	30	31	32	33	34	34	35	36	37	38
x0.7	24	25	25	26	27	28	28	29	30	30
x1.24	53	55	56	57	58	60	61	62	63	65

Lead edge adjust value for each magnification ratio. (Inch series)

x1.0	10	11	12	13	14	15	16	17	18	19
x0.75	5	5	6	7	8	8	9	10	11	11
x0.64	1	2	3	3	4	5	5	6	6	7
x1.24	16	18	19	20	21	23	24	25	26	27

x1.0	20	21	22	23	24	25	26	27	28	29
x0.75	12	13	14	14	15	16	17	17	18	19
x0.64	8	8	9	10	10	11	12	12	13	13
x1.24	29	30	31	32	34	35	36	37	39	40

x1.0	30	31	32	33	34	35	36	37	38	39
x0.75	20	20	21	22	23	23	24	25	26	26
x0.64	14	15	15	16	17	17	18	19	19	20
x1.24	41	42	44	45	46	47	48	50	51	52

x1.0	40	41	42	43	44	45	46	47	48	49
x0.75	27	28	29	29	30	31	32	32	33	34
x0.64	20	21	22	22	23	24	24	25	26	26
x1.24	53	55	56	57	58	60	61	62	63	65

SF-7350 only

Ex. Normal magnification ratio lead edge adjust value (35)

0.75 → 23

0.64 → 17

1.24 → 47

] DEVELOPER UNIT

Major parts replacement and installation

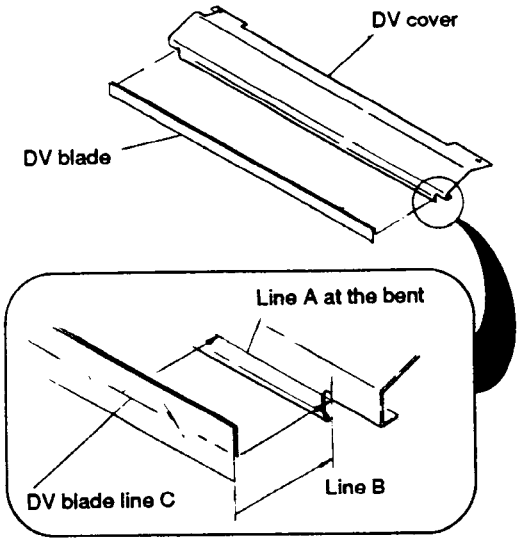
DV blade

DV blade sheet must be replaced every 120,000 copies.

Remove the DV blade, which is bonded with double sided tape from the DV cover.

Bond a new DV blade as illustrated in the figure.

Match the line A of the DV cover bent portion with the line C of the blade and bond it together using line B as a reference



Peel the backing from DV blade and install it on the DV cover.

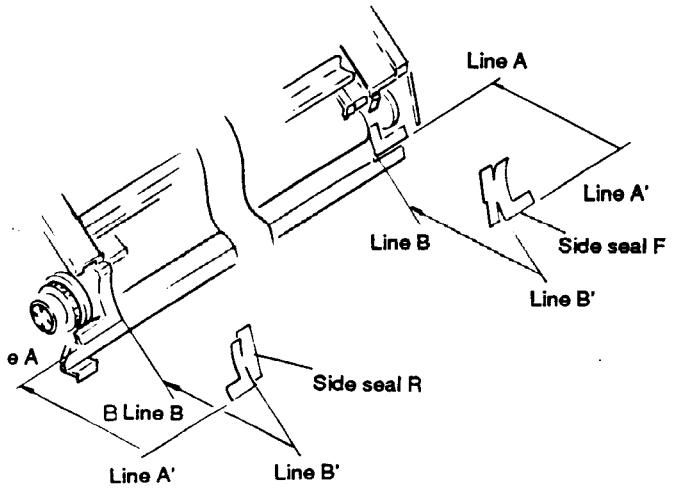
)TE: The backing paper must be completely peeled away to avoid scratching the drum.

. DV side seals, L and R

e seals must be replaced every 120,000 copies.

Remove the toner cover from the developer unit.

Bond the MG side seals as shown in the figure below, using the base line as a reference.



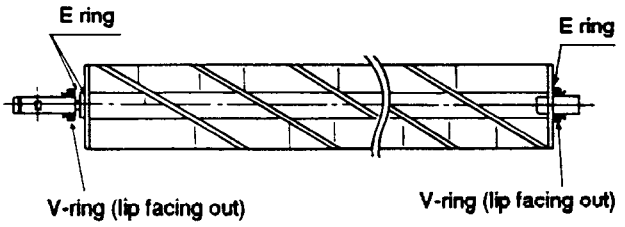
Align line A with line A' and line B with line B' then bond in position.

OTE: Since the DV side seals are close to the OPC drum, insure that they do not peel and damage the drum surface.

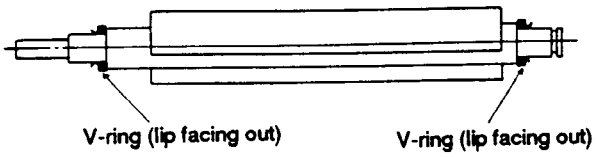
C. V-ring installation

Note the installing direction of V-rings attached to the stirring roller and the MX roller and install them as shown in the figure.

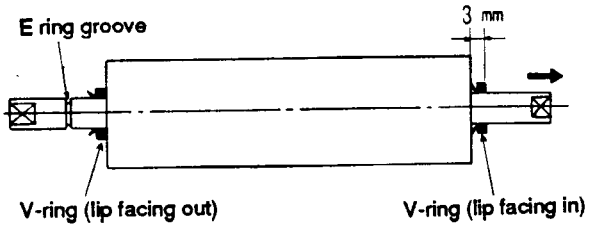
a) MX roller



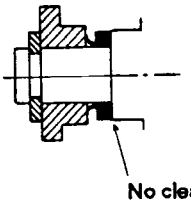
b) Stirring roller



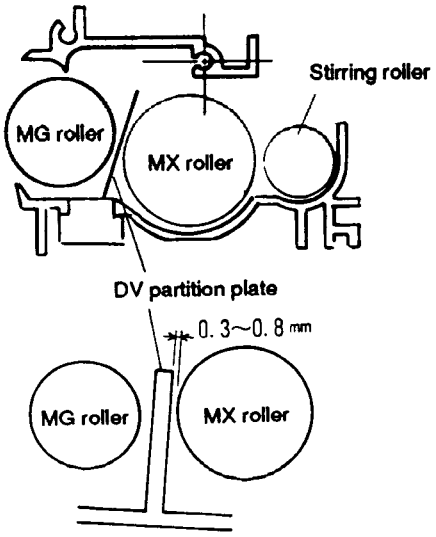
c) MG roller



NOTE: When the V-ring is pulled towards the arrow direction, it must be 3mm from the edge of the MG roller.



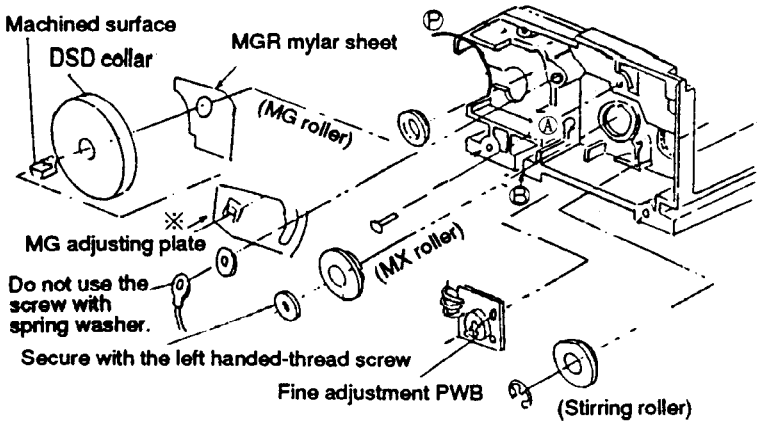
NOTE: Ensure when re-assembling that the DV partition plate is not in contact with the MG roller and MX roller.

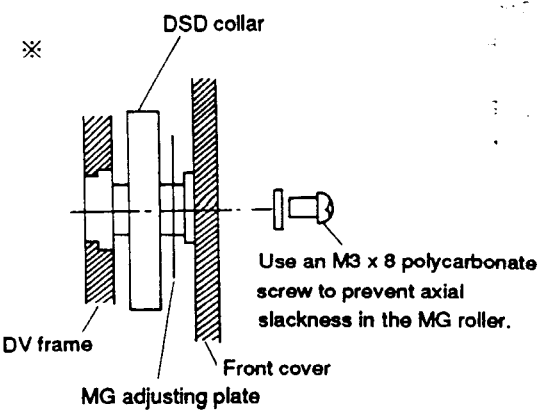


D. Precautions in assembling the DV unit front side

1) The machined surface of the MG roller shaft must face up when installed.
2) The MX roller must be fastened with a left handed-thread screw.
3) The harness must be firmly pushed into the groove of A) and B).
4) The MGR mylar sheet must be bonded in alignment to the center of hole of the DSD collar.

(DV unit front frame side)




※
DSD collar
Use an M3 x 8 polycarbonate screw to prevent axial slackness in the MG roller.
DV frame
Front cover
MG adjusting plate

E. Precaution in assembling the DV unit rear side

1) Install the DV harness connector with its cut on the right side.
2) Note that the DV idle shaft is a left hand thread.
3) The gear train must be assembled in the order of DSD collar, DV 2-stage gear, DV gear 20T, and the connector.
4) The stirring roller gear (20T) must be inserted completely before securing with the grip ring.

F. Check items

1) The DSD collars must rotate smoothly when installed.

   Check the DSD collar on the driving side by pushing the 20T gear against the DSD collar.

   Check the front frame side DSD collar that there is a slight clearance between the MG adjusting plate and the MGR mylar sheet.

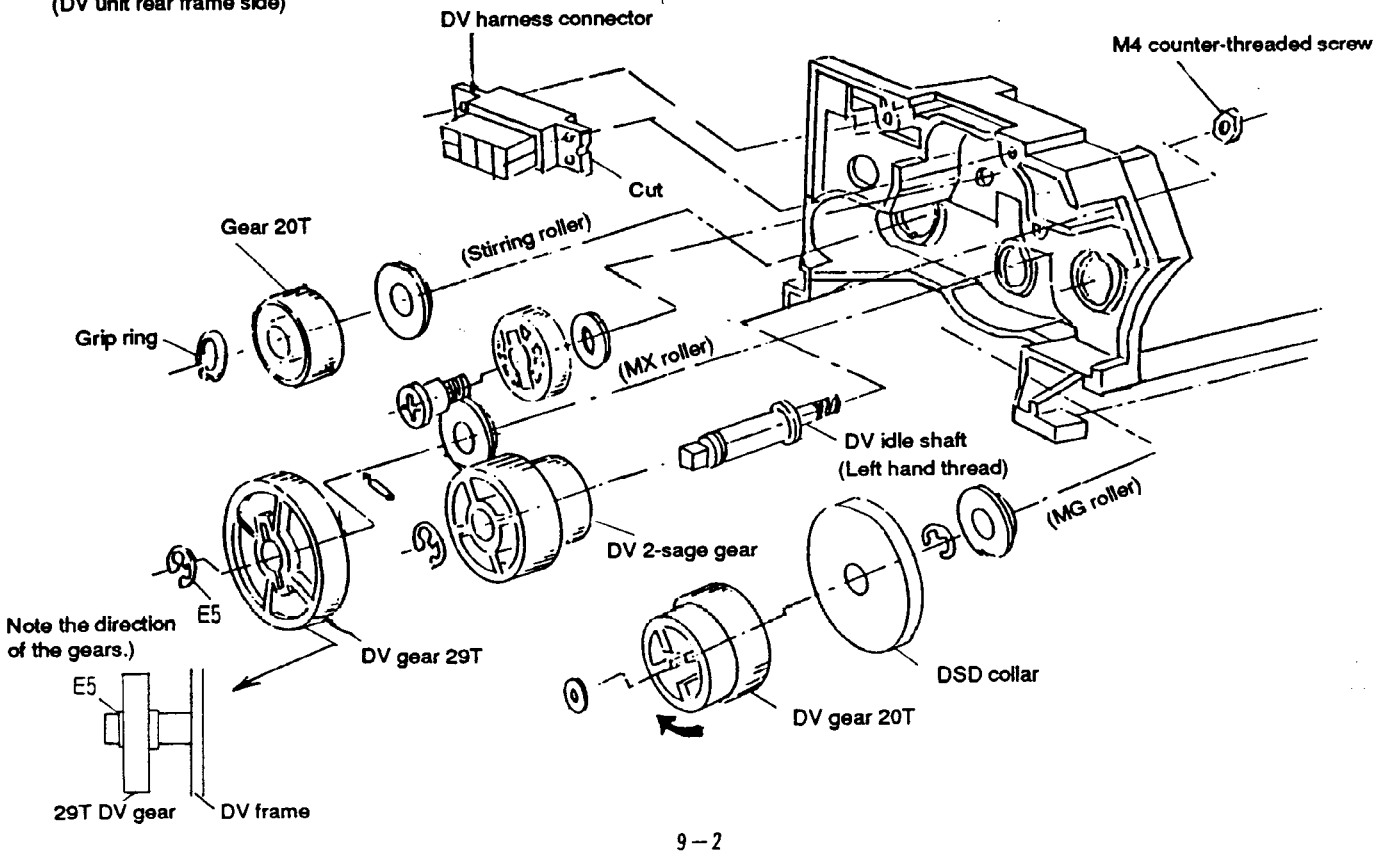
2) Check by rotating the (20T) DV gear in the arrow direction. The MG roller should rotate smoothly without excessive noise.

Other precautions

1) Because this developer unit operates under the normal rotation direction, developer might leak if rotated in the other direction.

   The DV gear 20T has to be rotated clockwise as seen from the driving side.

(DV unit rear frame side)

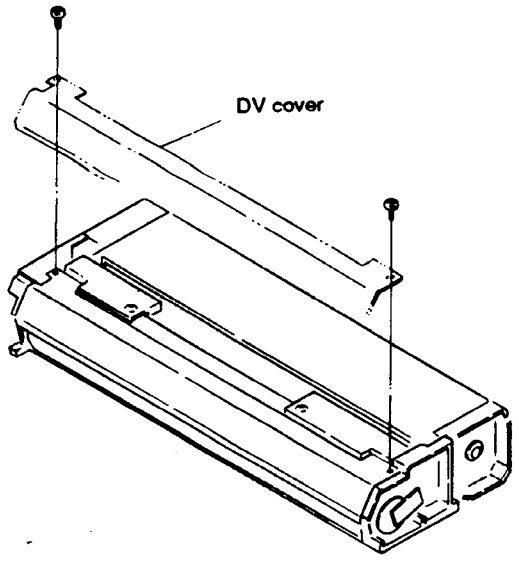


Adjustments

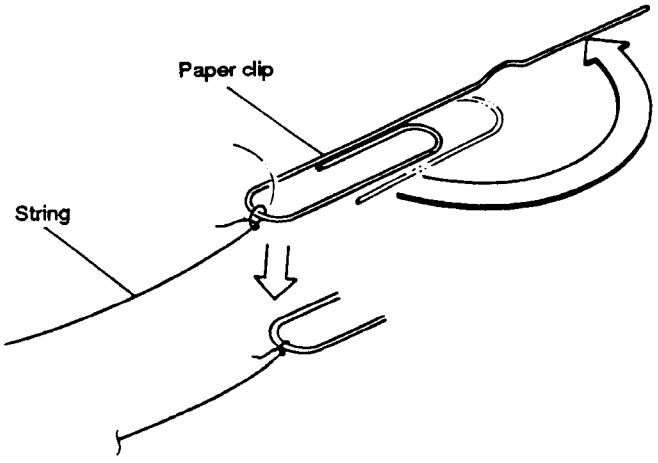
. MG roller main pole adjustment

!) Remove the developer unit from the copier.

Remove the DV cover (two screws).

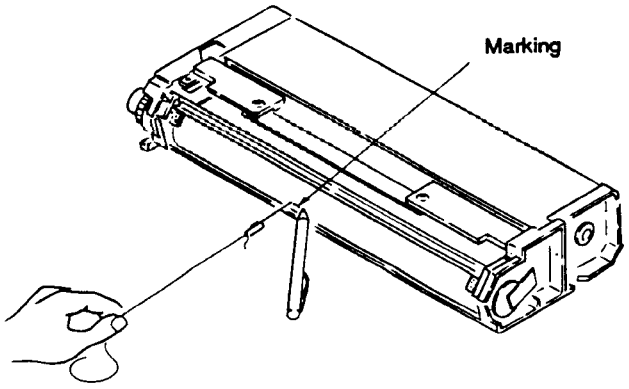


(2) As illustrated in the figure below, stretch one end of a paper clip and tie the other end with a string.



(3) Hold the string and bring the paper clip close to the MG roller.

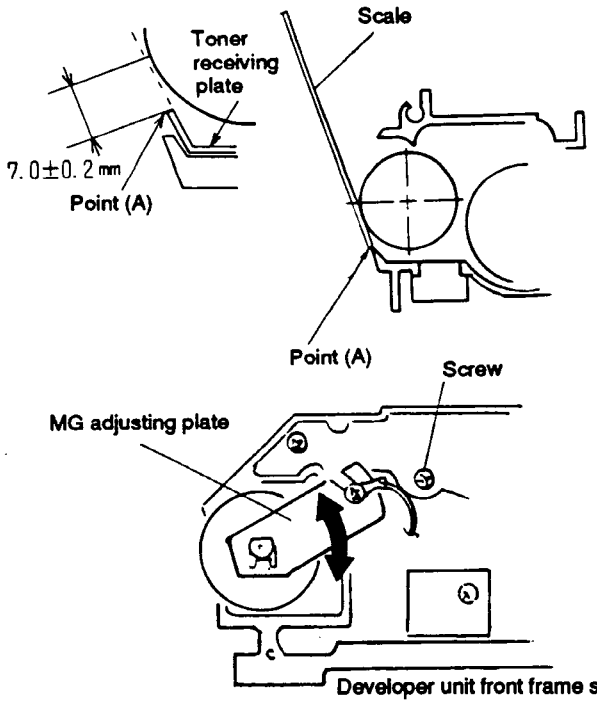
(4) Mark the surface of the MG roller sleeve where the clip makes contact with the MG roller.



(5) Measure the distance between this mark and point (A) on the ~~DV doctor blade~~. Make sure if the distance is within 7.0 ±0.2mm. TONER REMOVING PLATE.

If not, loosen the MG roller adjusting plate screw and move the MG adjusting plate.

Then, repeat steps 3) to 5) again, to check the adjustment.



(6) Tighten the MG roller adjusting plate screw.

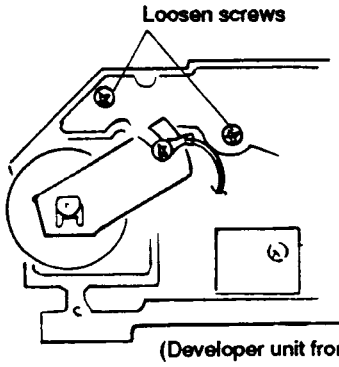
B. DV doctor blade to MG roller gap adjustment

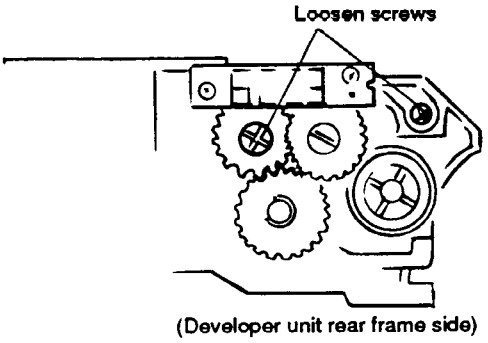
The following problems may occur if the DV doctor blade is adjusted improperly.

- Lack of copy density
- Background on the copy
- Toner dusting

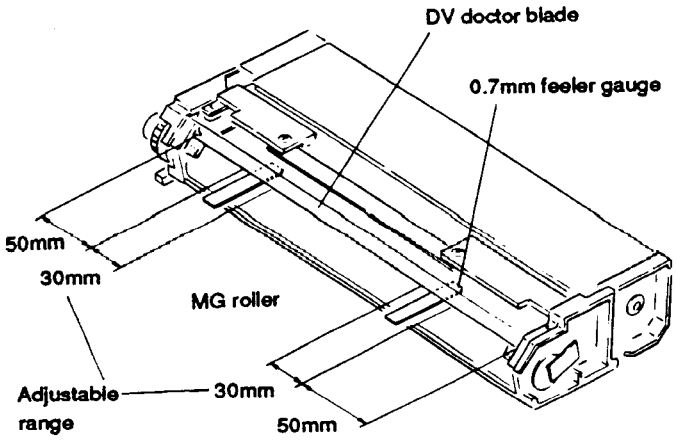
(1) Remove the DV cover, refer to 2-A-(1).

(2) Loosen the DV doctor blade holding screws.



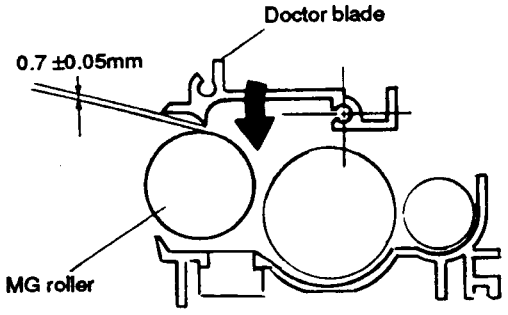


(3) Insert the 0.7mm feeler gauge between the MG roller and the DV doctor blade 50 to 80mm in from the edge of the developer tank, as shown.



(4) Push the DV doctor blade in the arrow direction and fasten it with the screw.

(5) At three locations near the center of the developing tank and 50 to 80mm location from its sides, make sure the doctor blade clearance is 0.7 ±0.05mm.

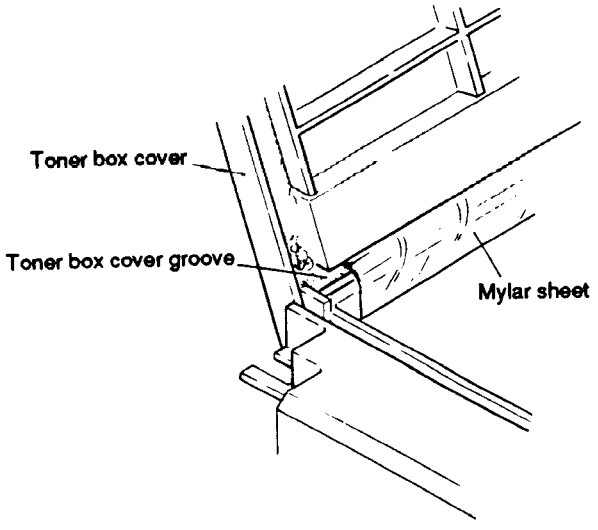


NOTE: Do not scratch the DV doctor blade when adjusting.

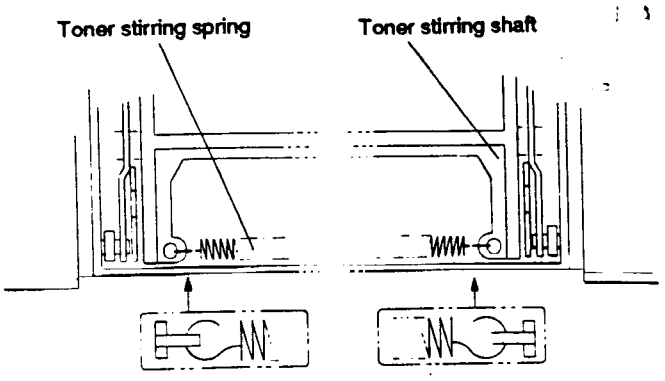
3. Toner box

A. Hints and tips for re-assembling

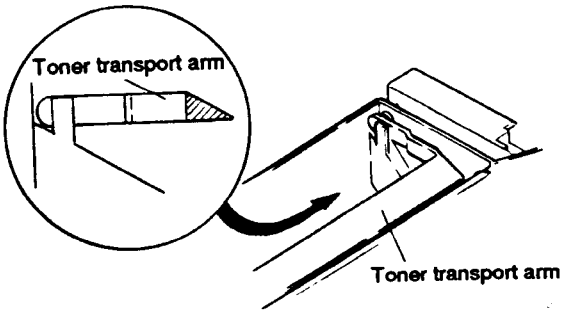
(1) When installing the toner box cover on the toner box, the mylar sheet must be engaged into the groove.



(2) The toner stirring spring must be installed from beneath the toner stirring roller.



(3) Note the installing direction of the toner transport arm.



10] FUSER UNIT

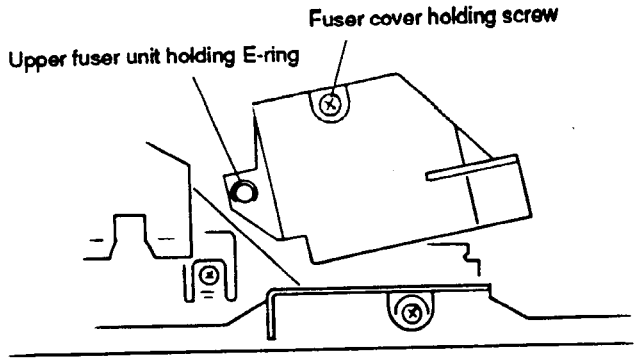
. Major parts replacement

he upper fuser unit must be removed before replacing a component.

\. Removing the upper fuser unit

(1) Open the clam shell mechanism and remove the rear panel.

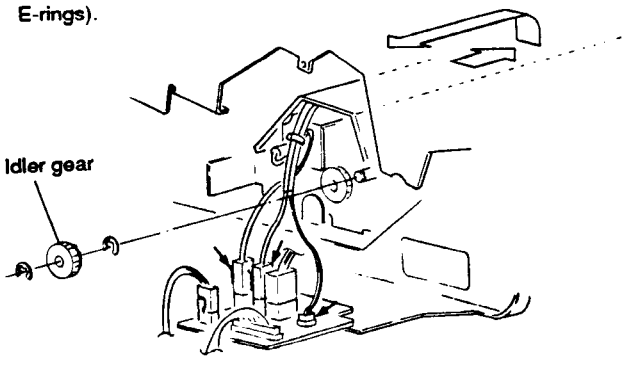
(2) Remover the fuser cover (one screw).



(3) Remove the front frame side upper fuser unit holding E-ring.

(4) Remove the rear frame side connectors (three) and the idler gear.

Push the upper fuser unit in the arrow direction to remove (two E-rings).



- Reverse the sequence to re-assemble.

B. Heater lamp

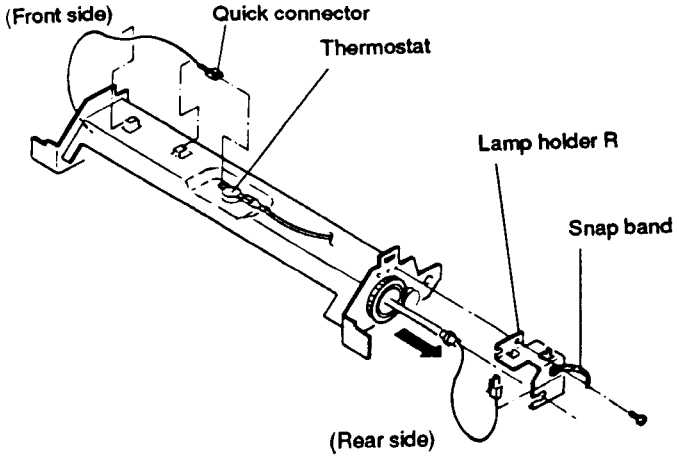
(1) Remove the upper fuser unit, as described in 1-A-(1) to (4).

(2) Remove the snap band on the rear side of the upper fuser unit.

(3) Remove the quick connector on the front side of the thermostat.

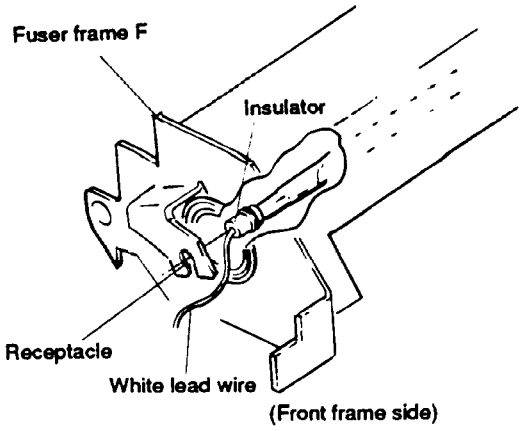
(4) Remove the lamp holder R (one screw).

Take out the heater lamp in the arrow direction.



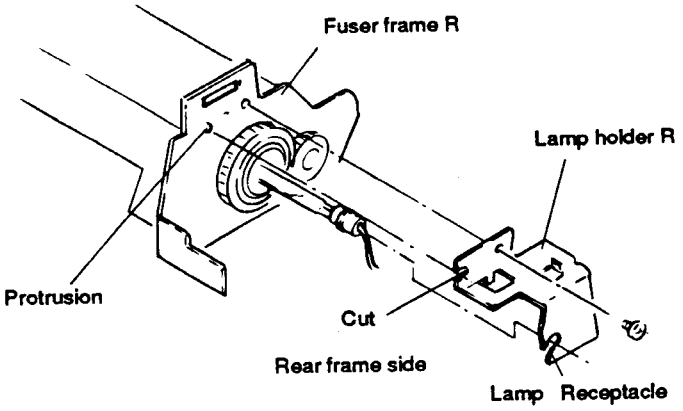
Re-assembly

(1) Insert the white lead end of the heater lamp through the heat roller R side and set the insulator in the receptacle of the fuser frame F.



(2) Set the rear frame end of the lamp into the lamp holder R.

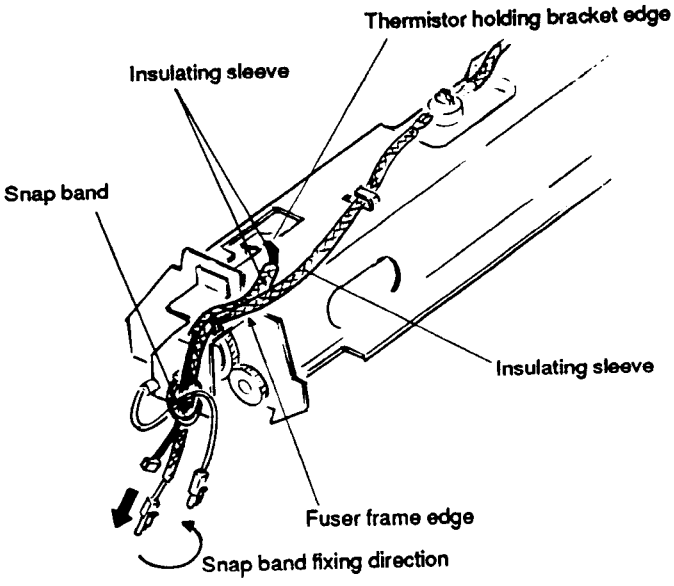
Match the cut in the lamp holder to the protrusion of the fuser frame R, then secure it with a screw.



(Wire routing)

Note the following to set wires using snap band.

- Insulating sleeve should be located over the fuser frame edge or thermistor holding bracket. Leads should not come in direct contact with the edges of the fuser unit.
- Slightly stretch the harness in the arrow direction to remove loose installation and hold the wires with a snap band.



C. Thermistor, thermostat

(1) Remove the upper fuser unit, refer to 1-A-(11) to (4).

(Thermistor)

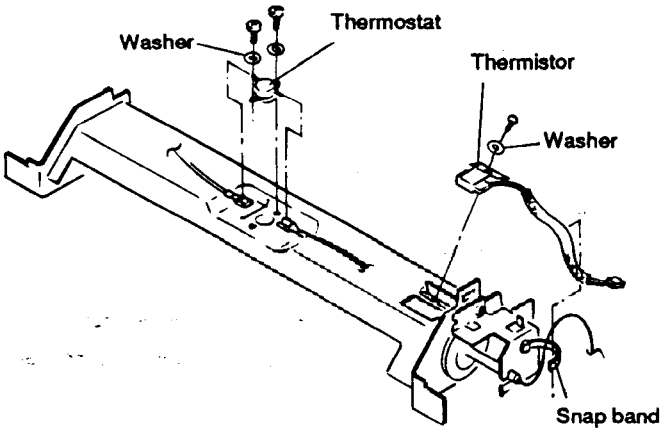
Remove the snap band.

Remove the thermistor (one screw).

(Thermostat)

Remove the quick connector.

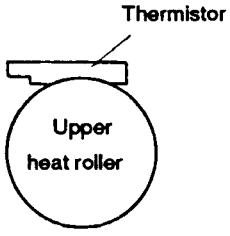
Remove the thermostat (one screw).



- Check-out after installation

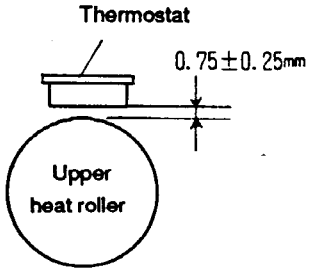
(Thermistor)

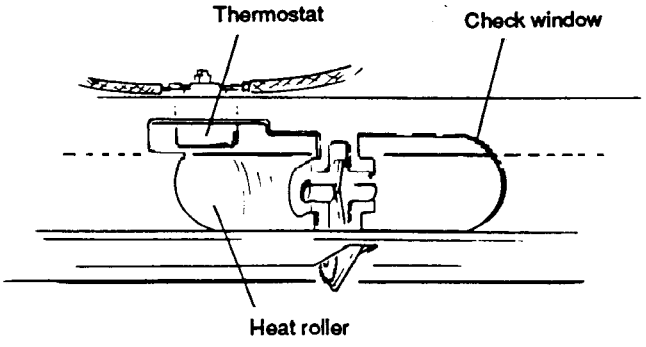
The thermistor must rest firmly on the upper heat roller.



(Thermostat)

Make sure that the clearance between the upper heat roller and the thermostat is 0.75 ±0.25mm.



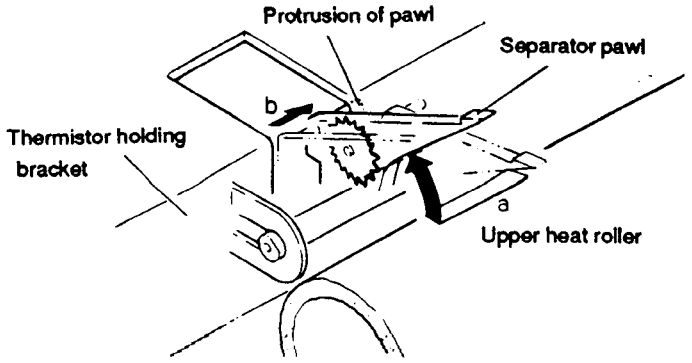


D. Upper heat roller

(1) Remove the heater lamp, refer to 1-B-(1) to (4).

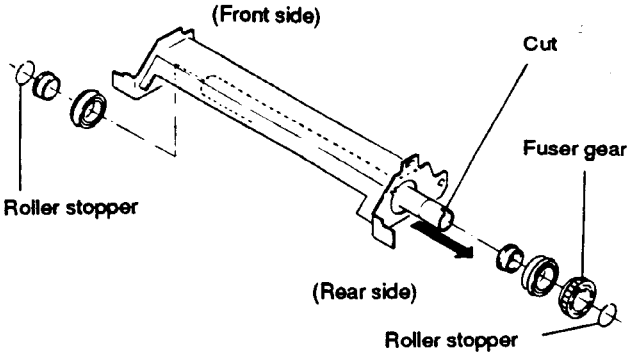
(2) Remove the separator pawl from the upper heat roller.

(Set the protrusion of the pawl on the thermistor holding bracket in order of "a" and "b" as shown below. (3) Remove the roller stopper using the C-ring pliers.



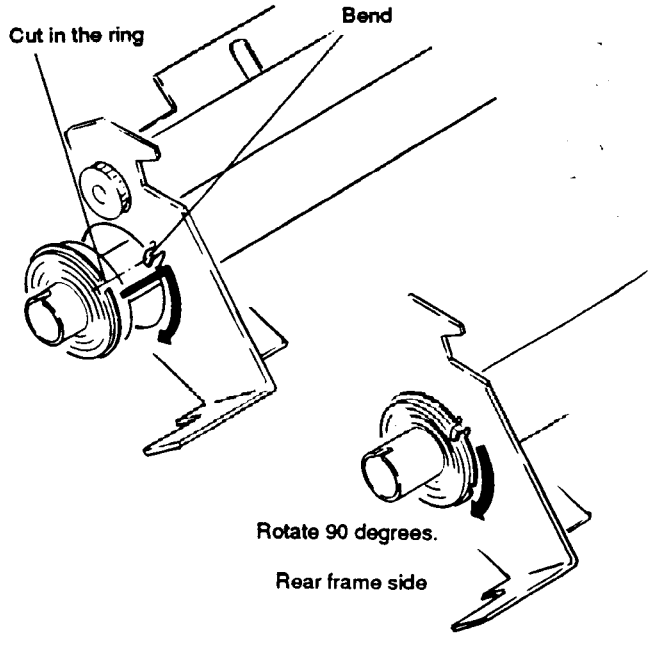
(4) Remove the fuser gear, bearing, and bushing.

Remove the heat roller in the arrow direction carefully, to avoid scratching it.



Re-assembly

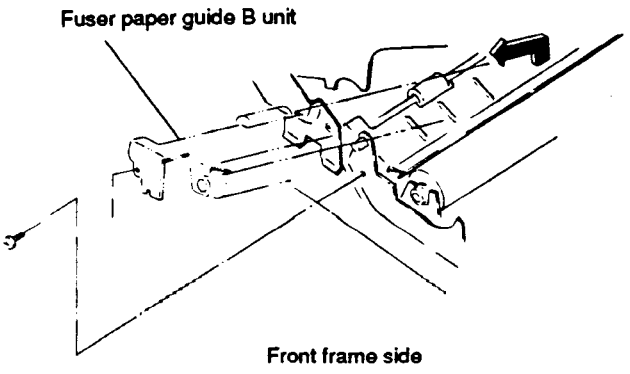
- Note the position of the bearing and bushing when installed.
- The protrusion of the fuser gear must be inserted in the cut of the heat roller.
- When installing the rear side bearing, align the cut in the bearing ring with the retainer on the fuser frame R. Rotate the bearing 90 degrees to secure the bearing in the rear fuser frame.

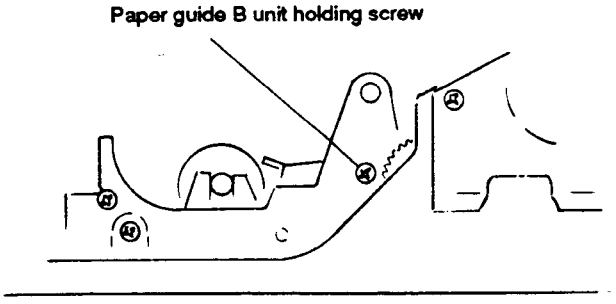


E. Lower heat roller

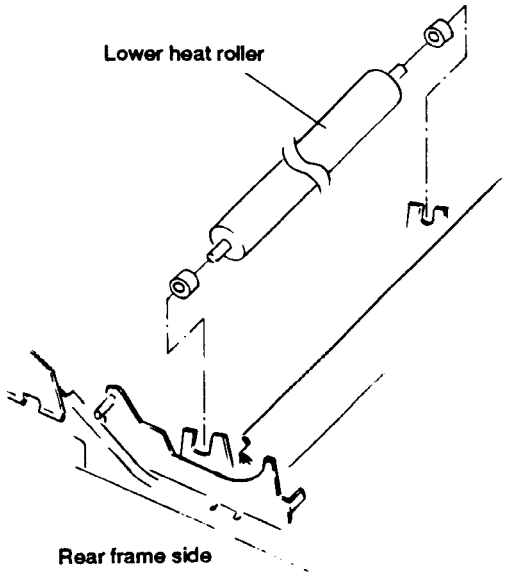
(1) Remove the upper fuser unit, reference to 1-A-(1) to (4).

(2) Remove the fuser paper guide B unit (two screws).





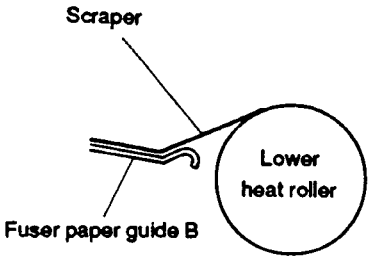
3) Remove the lower heat roller.



Re-assembly

Do not scratch the lower heat roller with the scraper, when installing the fuser paper guide B unit.

Make sure that the top end of the scraper is in contact with the lower heat roller as illustrated.



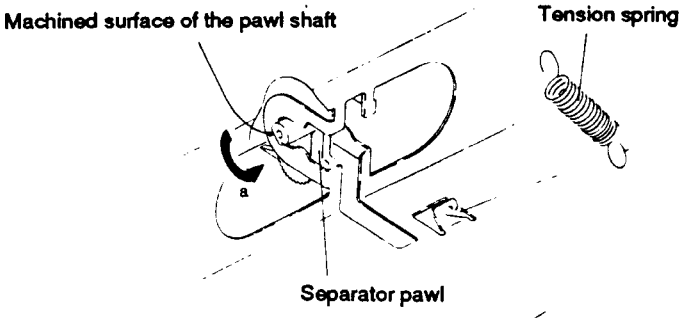
F. Separator pawl

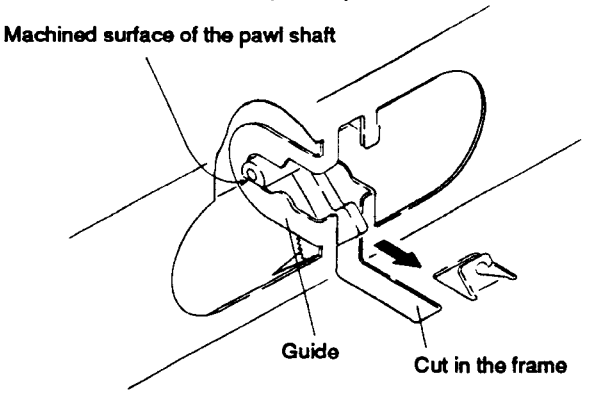
(1) Remove the upper fuser unit, refer to 1-A-(1) to (4).

(2) Remove the tension spring.

Rotate the pawl in the arrow direction "a" and match the machined surface of the pawl shaft to the guide.

Remove the separator pawl through the cut in the guide.



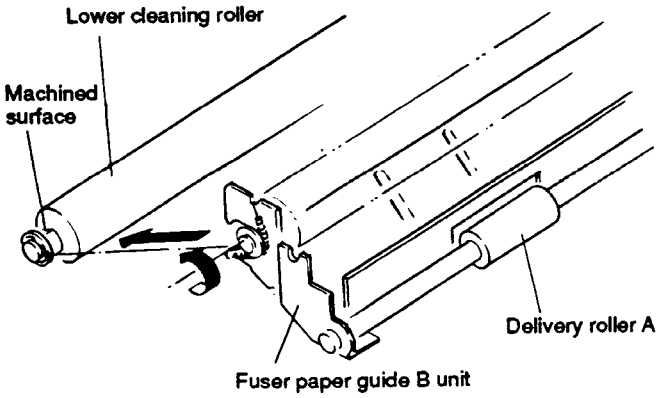


G. Cleaning roller

(1) Remove the upper fuser unit, refer to 1-A-(1) to (4).

(2) Remove the fuser paper guide B, refer to 1-E-(1) to (2).

(3) Match the machined surface of the bearing and remove the cleaning roller from the fuser paper guide B unit.

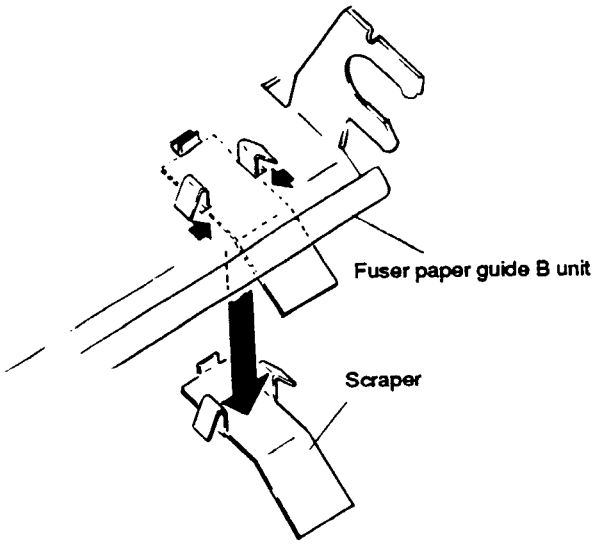


H. Scraper

(1) Remove the upper fuser unit, refer to 1-A-(1) to (4).

(2) Remove the fuser paper guide B unit, refer to 1-E-(1) to (2).

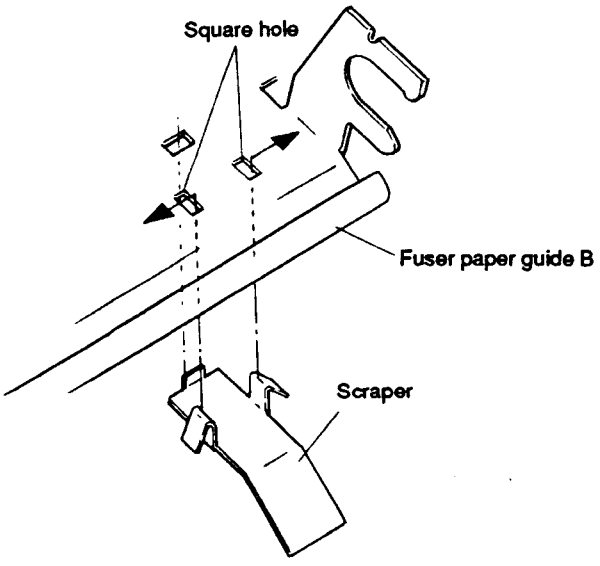
(3) Push the shank of the scraper in the arrow direction and remove it from the fuser paper guide B unit.



Re-assembly

(1) Insert the bend of the scraper into a square hole in the fuser paper guide D.

Push it through the holes until it appears on the other side.



2. Adjustments

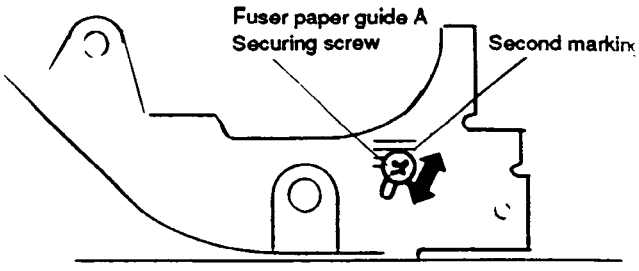
A. Fuser paper guide A installation location

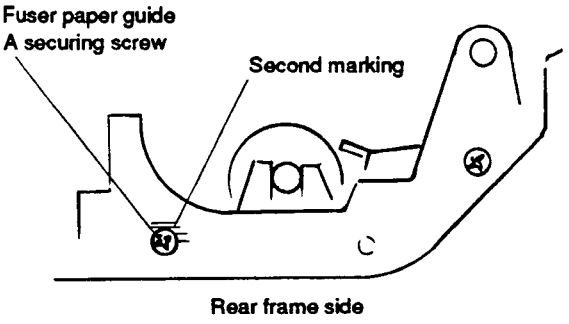
(Basic location)

The top end of the fuser paper guide A securing screw must be or the second mark on the fuser baseplate.

Open the clam shell and lift the upper fuser frame to see the screw

If wrinkles were to occur, change the location of the fuser pape guide A to adjust.





[11] COPY QUALITY ADJUSTMENTS

1. The copy quality must be adjusted for any of the following reasons:

- At the time of maintenance.
- After the drum current adjustments, after the coronas or corona wires are replaced, or after a high voltage unit is replaced.
- After replacing the CLC PWB unit or its components.
- After adjusting the VR on the CLC PWB.
- After replacing the auto exposure sensor (AE).
- After replacing, adjusting, troubleshooting, or disassembly of the optical system (copy lamp, reflector, etc.).
- After disassembling, troubleshooting, or adjusting the optical system.
- After replacing the OPC drum.
- After moving the exposure control plate.

2. Steps required before the copy quality adjustments are made

1) Clean the components in the optical system (table glass, lens, mirror, copy lamp, and reflector).
2) Clean the auto exposure sensor surface with an air blower (UKOGM0049CSZZ). Blow dust off with the air blower facing the AE sensor slit.
3) Clean the corona wires (MCU, THCU).
4) Clean the developer unit.
5) Clean the area near the OPC drum.

3. Copy quality adjusting procedure

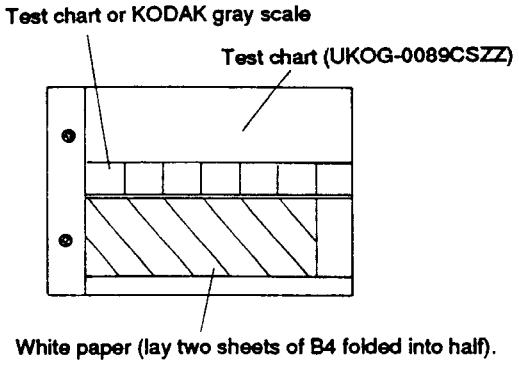
See the flowchart (next page).

NOTE: Perform the manual exposure adjustment first, then the auto exposure adjustment.

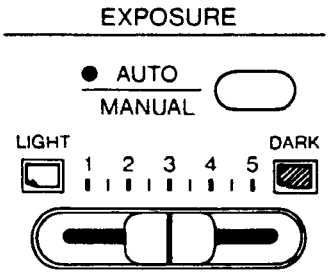
When the manual exposure adjusting pot is moved, it also affects the auto exposure. Therefore, the auto exposure must be adjusted after the manual exposure adjustment.

Description

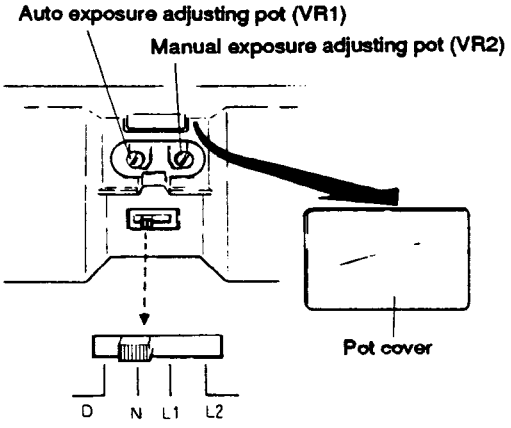
- Place four sheets of blank white paper, 120mm x 360mm, on top of each other and place the test chart (UKOG-0089CSZZ) or KODAK gray scale, so that the gray scale portion of the test chart can be copied.



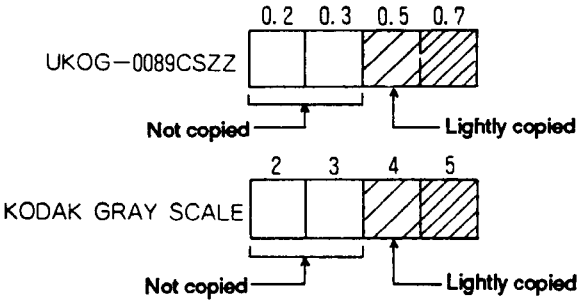
- Set it in the manual exposure mode using the manual/auto exposure select key. The auto exposure indicator turns off.



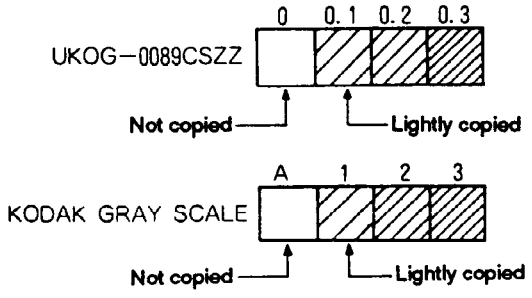
- Adjusting VR and AE correction switch location.



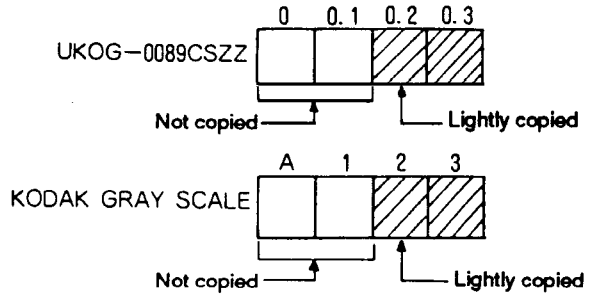
- Basic copy density (Manual exposure 1.0 (Light))



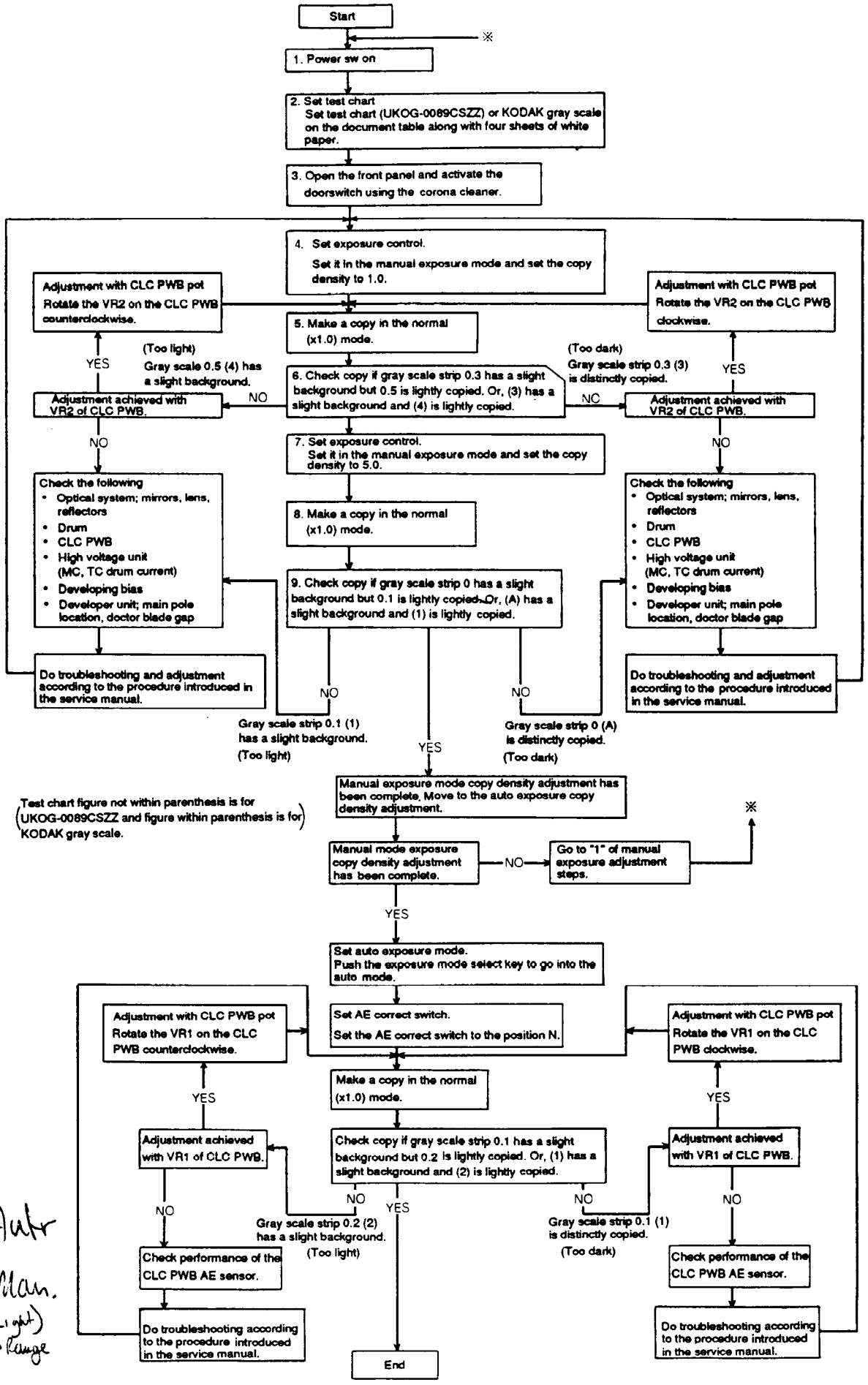
- Basic copy density (Manual exposure 5.0 (Darlk))



- Basic copy density (Auto exposure)



Flowchart for copy quality adjustment procedure


Start
※
1. Power sw on
2. Set test chart
Set test chart (UKOG-0089CSZZ) or KODAK gray scale on the document table along with four sheets of white paper.
3. Open the front panel and activate the doorswitch using the corona cleaner.
4. Set exposure control.
Set it in the manual exposure mode and set the copy density to 1.0.
Adjustment with CLC PWB pot
Rotate the VR2 on the CLC PWB counterclockwise.
Adjustment with CLC PWB pot
Rotate the VR2 on the CLC PWB clockwise.
5. Make a copy in the normal (x1.0) mode.
(Too light)
Gray scale 0.5 (4) has a slight background.
YES
6. Check copy if gray scale strip 0.3 has a slight background but 0.5 is lightly copied. Or, (3) has a slight background and (4) is lightly copied.
NO
(Too dark)
Gray scale strip 0.3 (3) is distinctly copied.
YES
NO
Adjustment achieved with VR2 of CLC PWB.
Adjustment achieved with VR2 of CLC PWB.
NO
NO
7. Set exposure control.
Set it in the manual exposure mode and set the copy density to 5.0.
Check the following
• Optical system; mirrors, lens, reflectors
• Drum
• CLC PWB
• High voltage unit (MC, TC drum current)
• Developing bias
• Developer unit; main pole location, doctor blade gap
8. Make a copy in the normal (x1.0) mode.
Check the following
• Optical system; mirrors, lens, reflectors
• Drum
• CLC PWB
• High voltage unit (MC, TC drum current)
• Developing bias
• Developer unit; main pole location, doctor blade gap
9. Check copy if gray scale strip 0 has a slight background but 0.1 is lightly copied. Or, (A) has a slight background and (1) is lightly copied.
Do troubleshooting and adjustment according to the procedure introduced in the service manual.
Do troubleshooting and adjustment according to the procedure introduced in the service manual.
NO
NO
Gray scale strip 0.1 (1) has a slight background.
(Too light)
YES
Gray scale strip 0 (A) is distinctly copied.
(Too dark)
Manual exposure mode copy density adjustment has been complete. Move to the auto exposure copy density adjustment.
(Test chart figure not within parenthesis is for UKOG-0089CSZZ and figure within parenthesis is for KODAK gray scale.)
Manual mode exposure copy density adjustment has been complete.
NO
Go to "1" of manual exposure adjustment steps.
※
YES
Set auto exposure mode.
Push the exposure mode select key to go into the auto mode.
Adjustment with CLC PWB pot
Rotate the VR1 on the CLC PWB counterclockwise.
Set AE correct switch.
Set the AE correct switch to the position N.
Adjustment with CLC PWB pot
Rotate the VR1 on the CLC PWB clockwise.
Make a copy in the normal (x1.0) mode.
YES
YES
Adjustment achieved with VR1 of CLC PWB.
Check copy if gray scale strip 0.1 has a slight background but 0.2 is lightly copied. Or, (1) has a slight background and (2) is lightly copied.
Adjustment achieved with VR1 of CLC PWB.
NO
NO
NO
YES
NO
Gray scale strip 0.2 (2) has a slight background.
(Too light)
Gray scale strip 0.1 (1) is distinctly copied.
(Too dark)
Check performance of the CLC PWB AE sensor.
Check performance of the CLC PWB AE sensor.
Do troubleshooting according to the procedure introduced in the service manual.
Do troubleshooting according to the procedure introduced in the service manual.
End

VR1 = Auto
VR2 = Manu. (Light) • Range

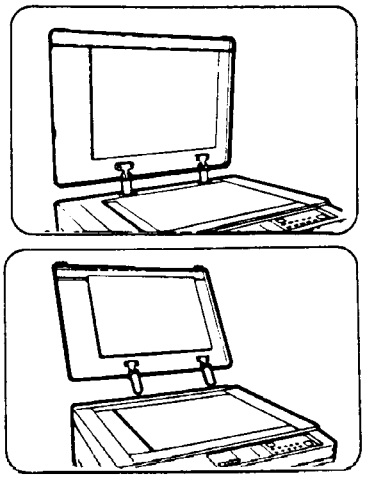
[12] OTHERS

1. Exteriors

A. Document cover

Open the document cover and lift the document cover up.

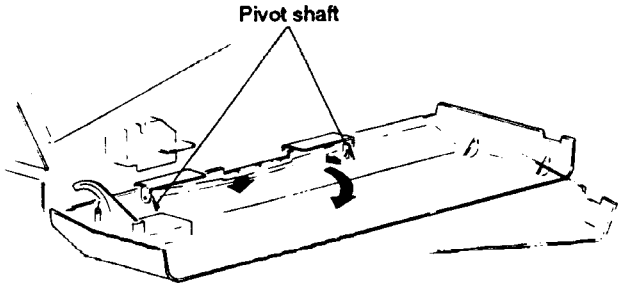
Tilt it upright and remove the document cover hinge, L and R, from the document cover hinge guide, L and R.



B. Front panel

Gently push the center of the front panel to release the right side latch and remove the panel.

NOTE: Do not deform the pivot shaft.



C. Rear panel

Remove two screws and pull it back to remove.

D. Lower left panel

Remove two screws.

Slightly lift it up and release the latch at two locations to remove.

E. Upper left panel

Remove two screws.

Lift the bottom of the panel up and left and release engagement from three latches inside.

NOTE: Do not break latches.

F. Right panel

Remove two screws.

Lift the bottom of the panel up and right and release engagement from three latches inside.

NOTE: Do not break latches.

When replacing, make sure that the latches are properly engaged at the both sides of the manual feed block.

Don't scratch the rib of the paper transport section (U-turn part).

(It will be the cause of jam.)

G. Operation panel

Remove two screws.

Lift up both sides of the panel and release engagement from latches inside.

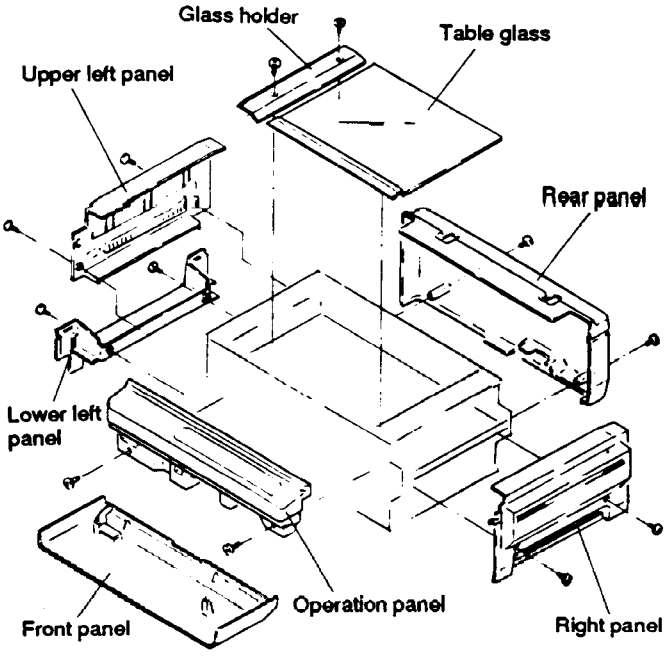
Pull it back to release engagement from two other latches inside.

NOTE: Do not break latches.

H. Table glass

Remove the glass holder.

Remove the table glass.



2. Sensors

A. MHPS, MORS

(1) Remove the rear panel.

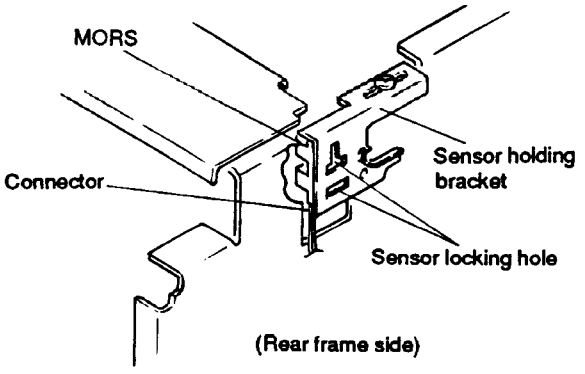
(2) Remove the sensor holding bracket.

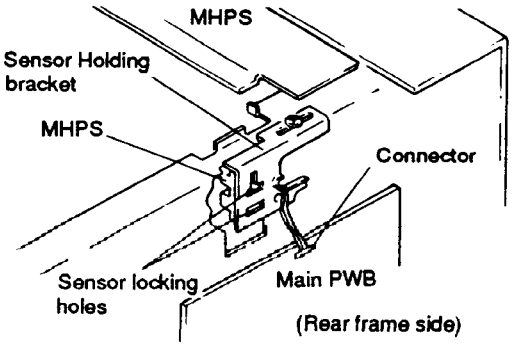
(3) Unfasten the connectors.

MHPS: Unfasten the MHPS connector from the main PWB. Leads are extended from the sensor.

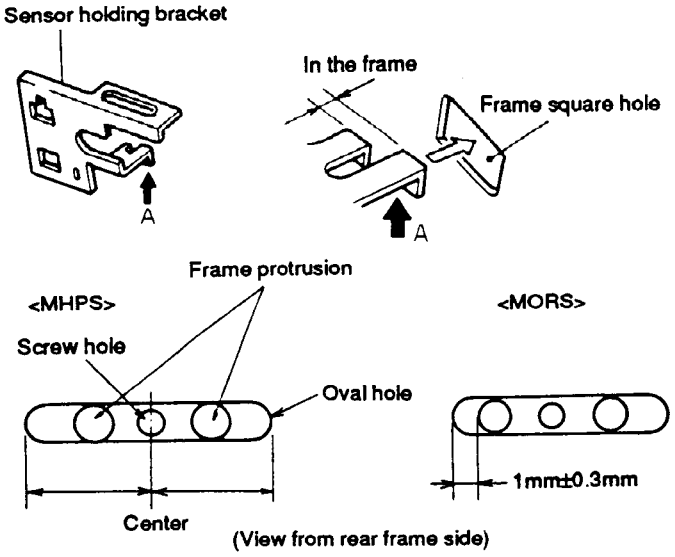
MORS: Unfasten the connector from MORS. Leads do not extend from the sensor.

(4) Release lock from latch to remove the sensor from its bracket.





- Reverse the sequence to re-assemble and note the following:
  - Insert the portion A of the sensor holding bracket in the frame and set the center of the screw holes to the center of the oval holes.



(View from rear frame side)

If the copy lamp unit hits the frame when moving forward or backward, change the location of the sensor holding bracket.

If the location of the MHPS is changed, copy lead edge must be adjusted.

B. TFD

(1) Remove the operation panel (two screws).

(2) Unfasten the TFD connector.

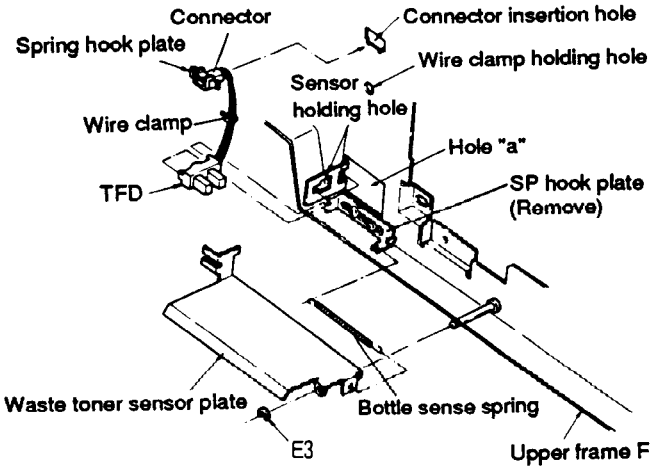
Remove the wire clamp from the frame.

(3) Remove the bottle sense spring.

Remove SP hook plate.

Remove the waste toner sense plate (one E-ring).

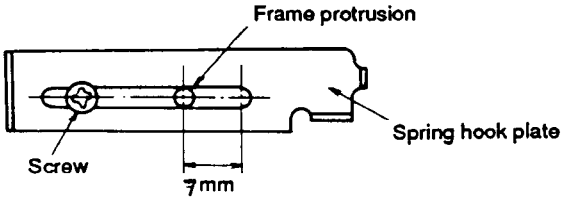
(4) Remove the TFD through the sensor installing hole and take out the connector through the hole "a".



(Re-assembly)

Reverse the sequence to re-assemble.

After replacement or removal of the spring hook plate, it has to be installed in the base location shown below.



NOTE: With the plate installed in the above location, the full waste toner will be detected at 35 grams. Changing the position of the plate 1mm changes the sensing level by 3 grams.

C. PSD

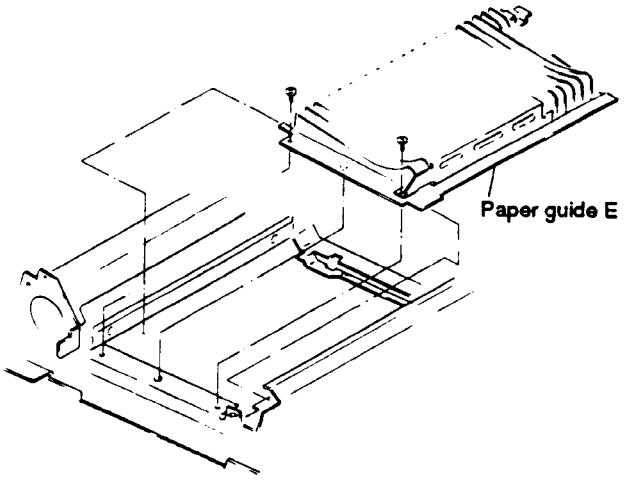
(1) Open the clam shell.

(2) Remove transfer corona unit.

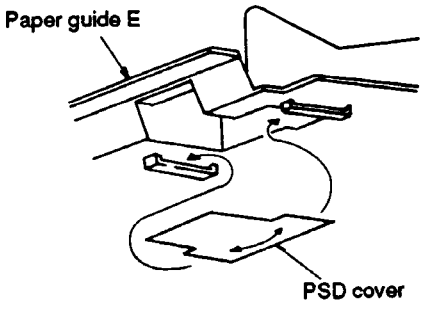
(3) Remove separation unit.

(4) Unfasten the PSD connector.

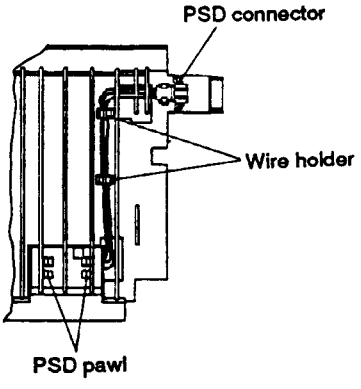
(5) Remove the separation guide and the paper guide E (two screws)



(6) Remove the PSD cover on the back side of the paper guide E.



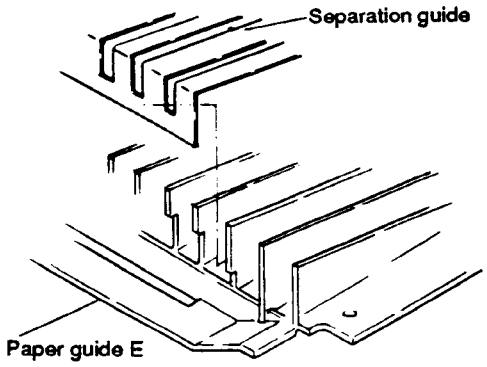
(7) Remove the PDS.



Back side view of the paper guide E

Reverse the sequence to re-assemble.

- The separator guide must rest firmly on the rib of the paper guide E, when it is installed.



- Do not deform the separator guide.
- The PSD must be firmly installed to the paper guide E.
- The actuator of the PSD must move smoothly; it must return by its own weight.

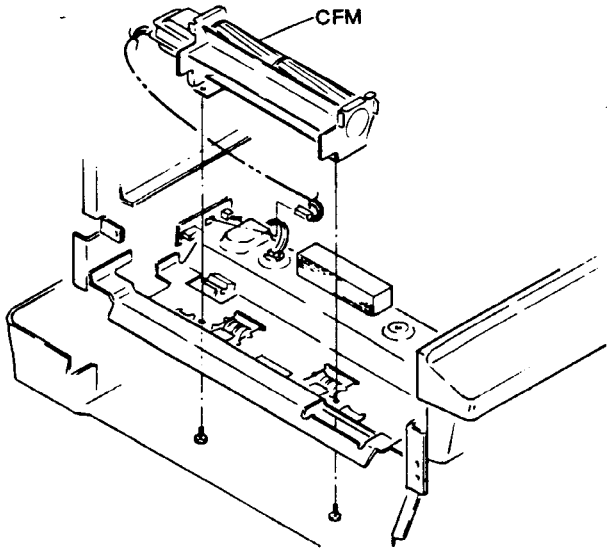
D. POD

(1) Open the clam shell.

(2) Remove the rear panel.

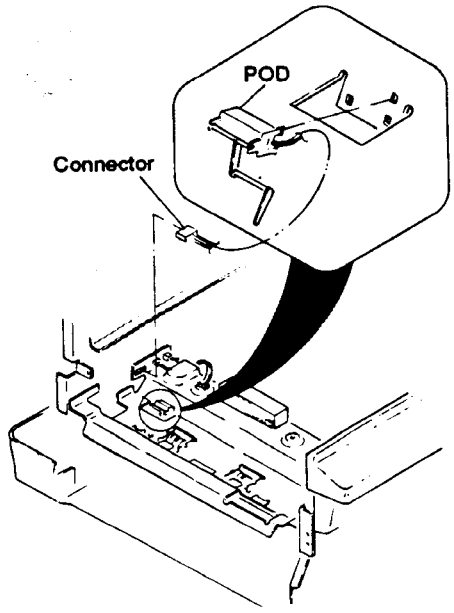
(3) Remove the connection light shield plate (Refer [8]-1-E-(4)–(5))

(4) Remove the CFM.



(5) Release the lock of the POD.

(6) Unfasten the connector and remove the POD.



(Re-assembly)

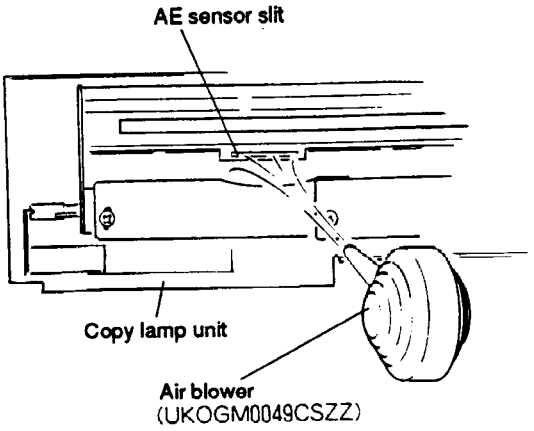
Follow the reverse sequence to re-assemble.

Make sure that the actuator of the POD returns by its own weight.

E. Cleaning the AE sensor

The AE sensor must be cleaned at every maintenance.

(1) Blow air through the AE sensor slit with the air blower to clean away dust on the AE sensor surface.

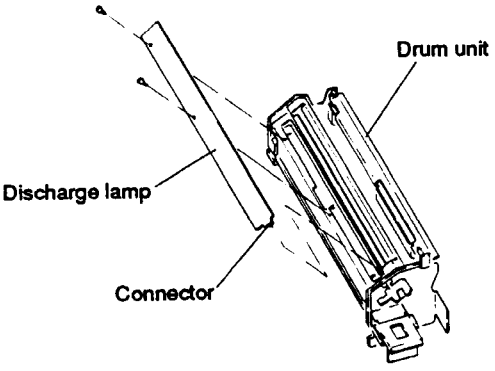


3. Drum unit

A. Discharge lamp

(1) Remove the drum unit from the copier, refer to [2]-3-A-(2) to (9).

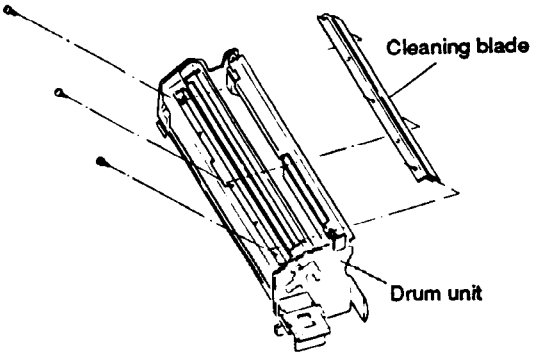
(2) Remove the discharge lamp from the drum unit (two screws).



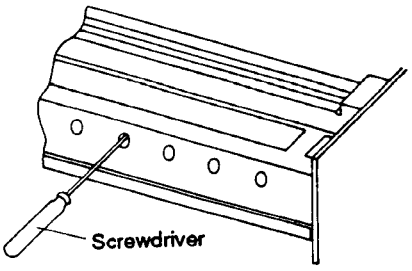
B. Cleaning blade

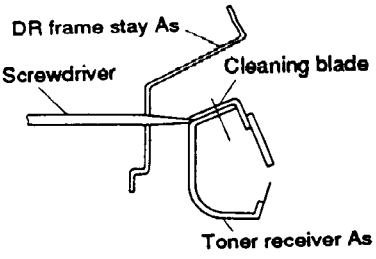
(1) Remove the discharge lamp, refer to 3-A-(1) to (2).

(2) Remove the cleaning blade (two screws).



- If the cleaning blade were to remain stuck to the support plate (toner receiver assy), insert a screwdriver through the ϕ6 hole in the drum frame stay assy as shown in the figure. Apply the tip of the screwdriver in a gap between the toner receive assy and the cleaning blade, and pry it to remove.

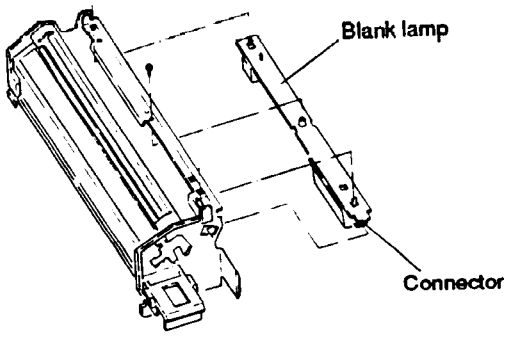




C. Blank lamp

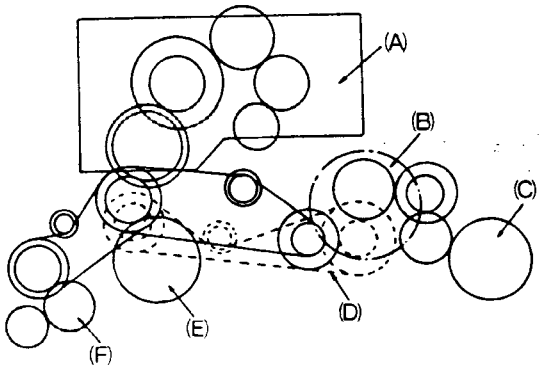
(1) Remove the drum unit from the copier, refer to [2]-3-A-(2) to (9).

(2) Remove the blank lamp from the drum unit.



4. Drive train

A. Block diagram



(A) Clutch unit: mirror base driving

- The shape of the SF-7350 clutch unit differs from that of the SF-7300. Also, there is a difference between the SF-7350 AB series version and the inch series version (two pieces of gears colored blue).

(B) Main motor

(C) Fuser gear

(D) HV PWB box unit: developing tank driving

(E) Drum gear

(F) Paper feed unit driving gear

The operating surface of all gear teeth and the shafts need to be lubed with grease.

B. Clutch unit

(1) Remove the rear panel.

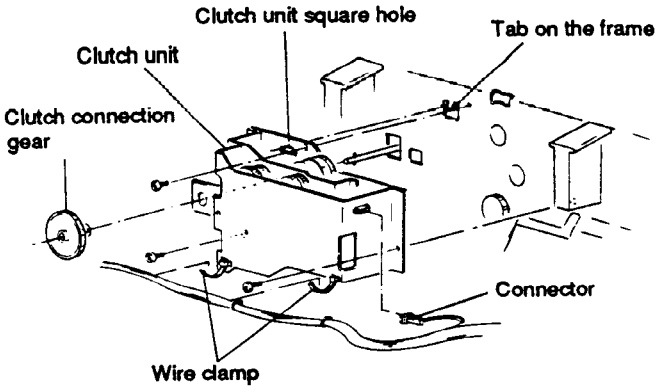
(2) Remove the clutch connection gear (SF-7350 only).

(3) Unfasten the connector.

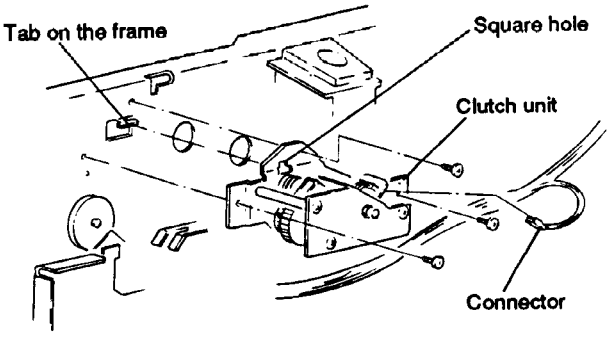
Remove the wire clamp.

(4) Remove the clutch unit (three screws).

(SF-7350)



(SF-7300)



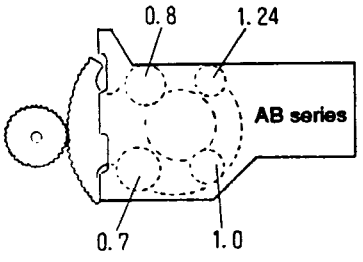
(Re-assembly)

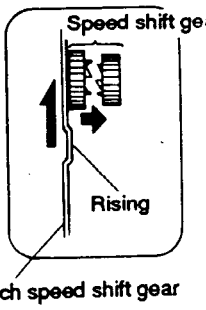
SF-7350

(1) Align the clutch unit frame hole with the tab on the frame to in stall the clutch unit.

(2) Insert the connector.

(3) Move the clutch speed shift gear to engage one of the fou gears.



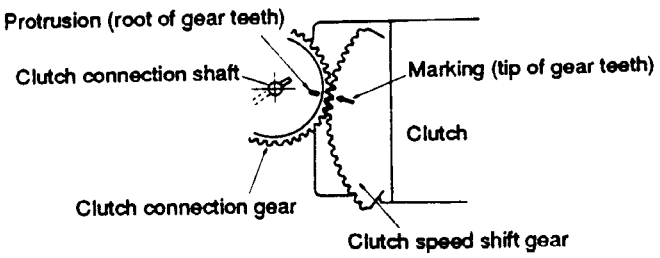


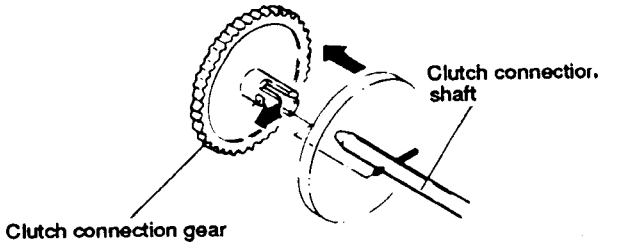
(4) Turn power on and set it to the normal (x1.0) mode.

If the shift gear does not engage, it will cause the troub status "L1".

(5) Turn power off.

(6) Move the clutch speed shift gear so that the protrusion on th clutch connection gear matches the mark on the clutch spe shift gear, and install the clutch connection gear on the clut connection gear shaft.





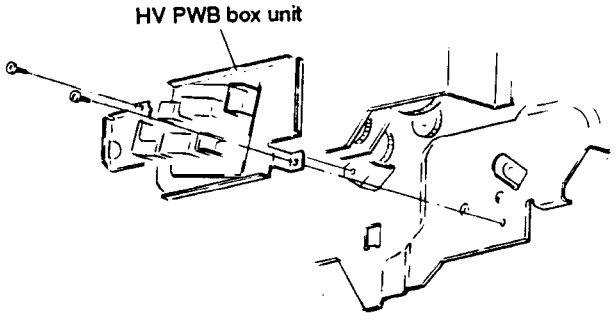
C. Main drive synchronous belt

Belt C (paper feed unit drive)

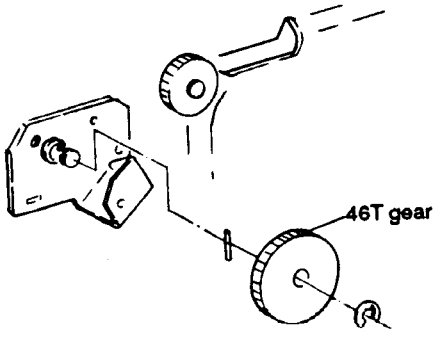
(1) Remove the clutch unit, refer to 4-B-(1) to (4).

(2) Open the clam shell.

Remove the HV PWB box unit (two screws, connector, faston).

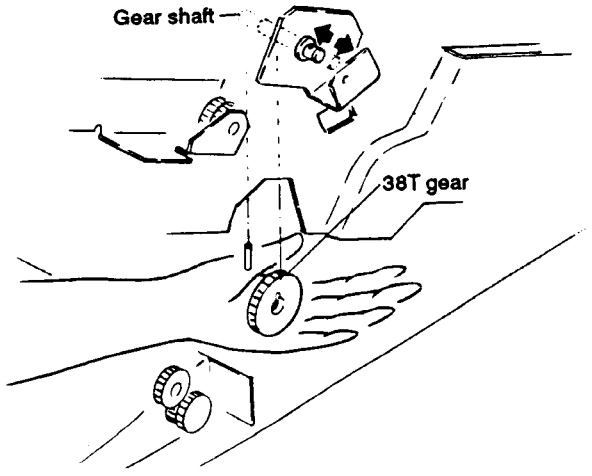


(3) Remove the 46T gear (E-ring, stop pin).

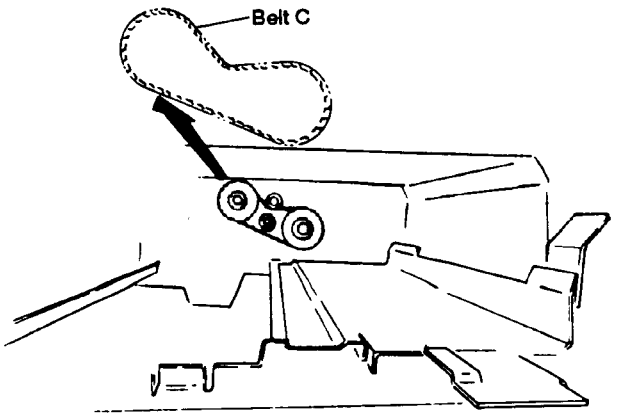


(4) Insert the gear shaft inside and remove the stop pin.

Remove the shaft of the 38T gear.



(5) Remove the belt C.



(Re-assembly)

Reverse the sequence to re-assemble.

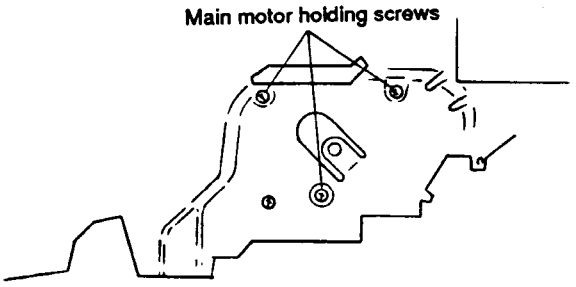
Belt A

(1) Remove the belt C, refer to 4C (1) to (5).

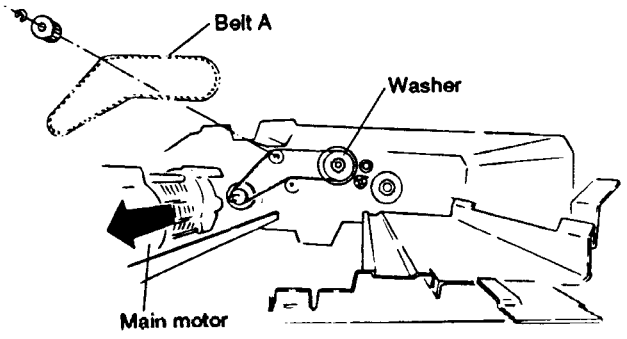
(2) Remove the washer.

(3) Remove the main motor holding screws (three).

Remove the main shaft from the frame.



(4) Remove the belt A.

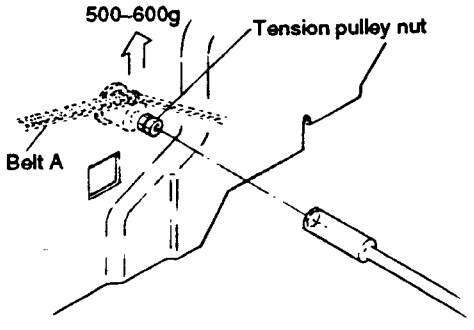


(Re-assembly)

Reverse the sequence to re-assemble.

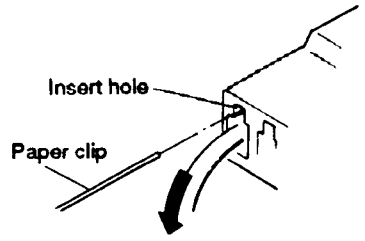
Tension adjustment

Lift the tension pulley nut with a force of 500 to 600 grams and tighten it.

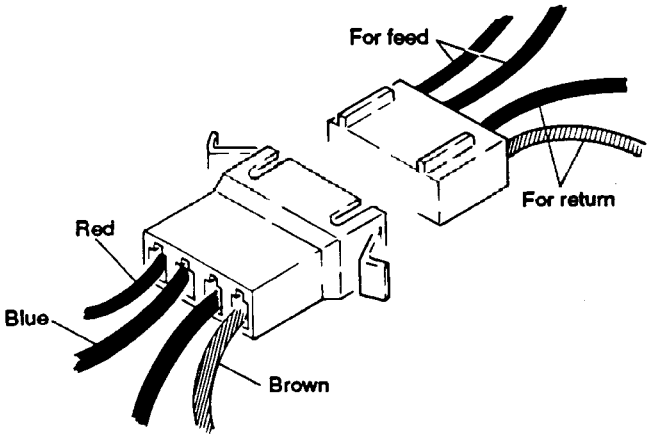


D. Removing the clutch leads

(1) Insert a paper clip into the connector as illustrated.



Note the color of the lead when installing.



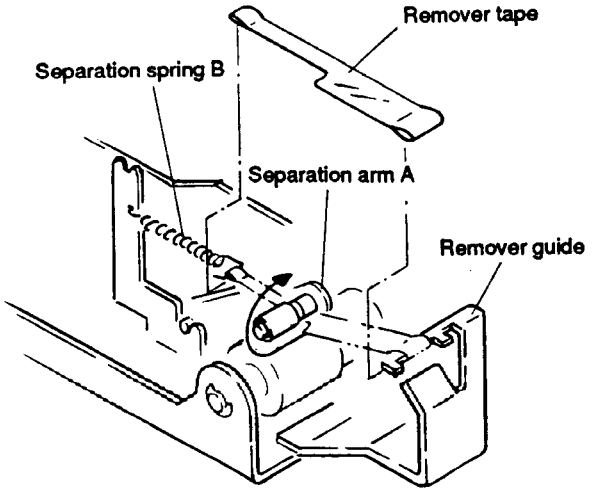
5. Separator tape

A. Remover tape

(1) Open the clam shell.

(2) Lift up the separator arm A and take out the remover tape from above the tension roller.

(3) Remove the remover tape from the remover guide and the separation spring B.

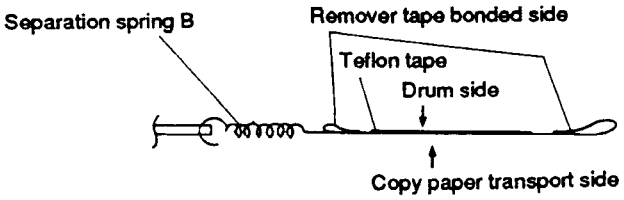


Reverse the sequence to re-assemble.

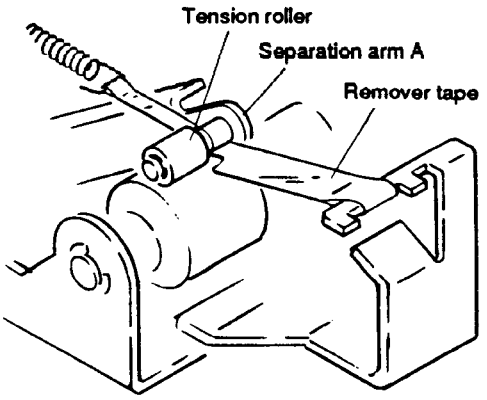
(Precautions for re-assembly)

- Install the remover tape as shown below.

  Teflon tape is bonded on the backside of the loop.



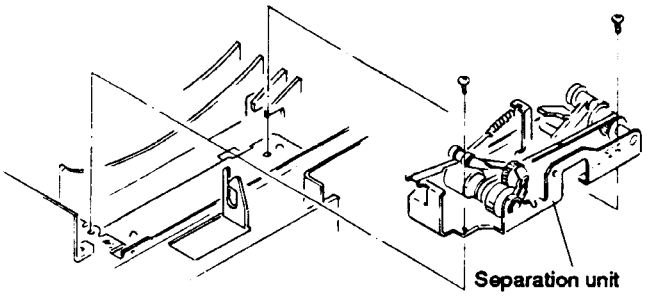
- The remover tape must rest between the tension roller and the separation arm A. The tape must be engage the separation roller A.



B. Separation unit

(1) Open the clam shell.

(2) Remove the separation unit from the copier (two screws).



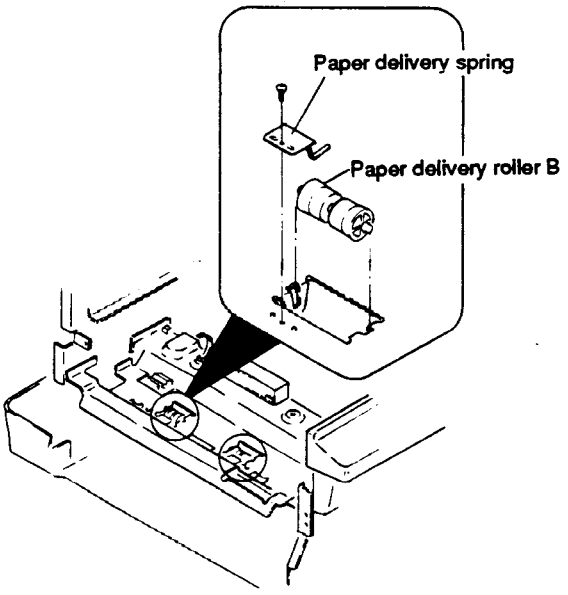
6. Paper exit block

A. Paper delivery roller B

(1) Remove the CFM, refer to 2-D-(1) to (3).

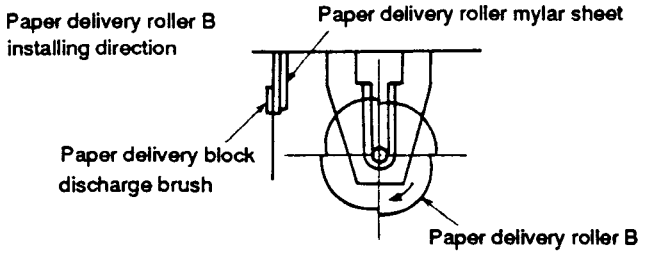
(2) Remove the paper delivery roller spring.

Remove the paper delivery roller B.



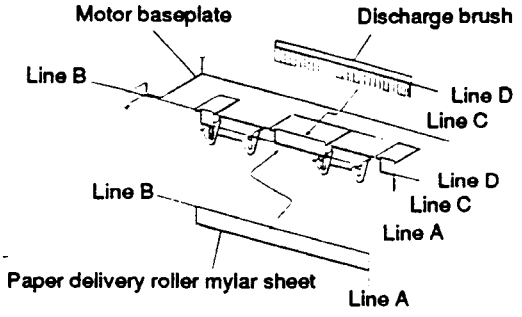
(Re-assembly)

- Reverse the sequence to re-assemble and note the installing direction of the paper delivery roller B.



B. Paper delivery roller mylar sheet, discharge brush

Bond those items in alignment to the base lines, A, B, C, D.

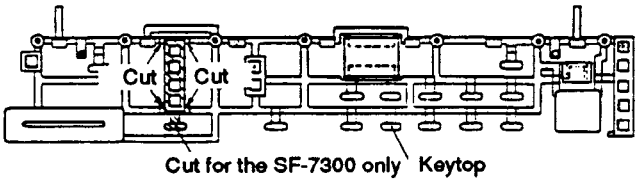


7. LED spacer

The same LED spacer is used on the operation PWB of the SF-7350 and SF-7300.

The unwanted magnification ratio select and display portion (shadowed area) needs to be cut away with a wire cutter, when replacing the LED spacer for the SF-7300.

(LED spacer)



8. Service main PWB initial setup

The service main PWB needs to be set up initially as described below.

No.	Item	Description
1	Counter	Contents of all counters are "0", including the total, maintenance, and developer counter.
2	Magnification ratio fine adjustment preset value	4. Variable by sim. 48.
3	Lead edge adjustment preset value	0. Variable by sim. 50, 59
4	Destination	01: not appropriate. Variable by sim. 79.
5	Maintenance counter preset value	2: 2500 copies. Variable by sim. 72.
6	Drum cleaning mode	10-second mode. Variable by sim. 90.
7	Manual feed mode	Autostart. Variable by sim. 97.
8	Toner motor frequency	50Hz. Variable by sim. 98

NOTE: "Sim" is test command.

9. Misfeed condition

Kinds of paper misfeeds

1) Misfeed that does not turn on PPD
   - If PPD did not turn on within 2.0 seconds after the activation of the cassette feed solenoid (CPFS).
   - If PPD did not turn on within 2.6 seconds after the activation of the multi-bypass stacker.

   Since it is not possible to sense the presence of paper because no paper sensor is incorporated in the cassette or multi-bypass stacker, the flickering status "P" is displayed in the multicopy number display window without illuminating the misfeed lamp. If the cassette was not inserted in the machine a solid "P" is displayed, instead of a flashing "P".
2) Misfeed that does not turn off PPD
   - If PPD did not turn off before the next sheet is to be fed in the multicopy mode.
   - If PPD did not turn off within 400msec after the discharge lamp turned off when the copy operation is terminated.
3) Misfeed that does not turn on PSD
   - If PSD did not turn on within 1.5 seconds after the resistor roller solenoid (RRS) turned on.
4) Misfeed that does not turn off PSD
   - If PSD did not turn off within 1.5 seconds after the resistor roller solenoid (RRS) turned off.
   - If PSD did not turn on within 3.8 seconds after PSD turned on.
5) Misfeed that does not turn on POD
   - If POD did not turn on within 2.7 seconds after PSD turned on.
6) Misfeed when POD is not turned on
   - If POD was not turned on (paper jammed by the heat roller) within 1.0 second after POD turned on.
7) Misfeed that does not turn off POD
   - If POD did not turn on within 2.7 seconds after PSD turned off.
8) Manual feed misfeed-1
   - If PPD did not turn on within 3.0 seconds after PID turned on. (Can be canceled when PID turns off.)
9) Manual feed misfeed-2
   - If PID turns on before going into the ready state after completion of copying when paper is supplied from the cassette.
10) At power on
   - If any one of PPD, PSD or POD did not turn on.

10. Remove the rear panel. Make a copy. If necessary, remove even the front panel.
If a copy is made without removing the front panel, it may damage some component in the fuser block due to an irregular temperature rise.

11. Precautions in halding the Lighium Battery

Lithium Battery used for main PWB

- Explasion risk may be caused by incorrect handling.
- It is only allowed to replace with the same type and manufacture of this battery.

[13] MAINTENANCE

The SF-SF-7300/SF-7350 requires specific maintenance every 30,000 copies.
The following is a list of basic maintenance items.
▲ = Replace/Install
× = Inspect (Clean/Adjust/Replace as necessary)
○ = Clean
★ = Lubricate
Δ = Adjustment

Item/Section	Parts description	Required Frequency						Remarks	
		Set up	30K	60K	90K	120K	Every call	Drum kit	Heat roller kit
1. Developer section	Developer, black	▲	▲	▲	▲	▲			
	Side seal F (PSEL-0242FCZZ)		×	×	×	▲	×		
	Side seal R (PSEL-0243FCZZ)		×	×	×	▲	×		
	DV plate (UCLEZ0079FCZZ)		×	×	×	▲	×		
	Drive gears		★	★	★	★			
2. OPC Drum Section	OPC drum	(▲)	▲	▲	▲	▲		1	
	Cleaning blade (UCLEZ0080FCZZ)		▲	▲	▲	▲	×	1	
	Blank lamp and filter		○	○	○	○			
	Discharge lamp and filter		○	○	○	○			
	Corona wire (MC)(DWIR-0466CSZZ)		▲	▲	▲	▲	×		
	Corona housing (MC)		○	○	○	○			
	Toner receive seal assy (CSPA-0021FCZZ)		×	×	×	×			
3. Separator/Transfer Section	Separation tape (PTPE-0134FCZZ)		▲	▲	▲	▲	×	1	
	Separation roller		○	○	○	○	○		
	Tension roller		○	○	○	○	○		
	Corona wire (TC)(DWIR-0466CSZZ)		▲	▲	▲	▲	×		
	Corona housing (TC)		○	○	○	○			
4. Fuser Section	Upper heat roller (NROLT0593FCZZ)		○	▲	○	▲	×		1
	Lower heat roller (NROLI0594FCZZ)		○	▲	○	▲	×		1
	Upper separator pawls (x 3)(CTME-0186FC01)		○	▲	○	▲	○		3
	Thermistor		○	○	○	○	○		
	Scraper (x 3)(LPLTM2865FCZZ)		×	×	×	×	×		
	Lower cleaning roller (CROLN0647FCZZ)		×	▲	×	▲	×		1
	Drive gears		★	★	★	★			
5. Paper Feed Section	Paper feed roller		○	○	○	○	○		
	Resist roller, upper and lower		○	○	○	○	○		
	Transport roller, upper and lower		○	○	○	○	○		
	Spring clutch (paper feed roller and resist roller)		★	★	★	★			
	Drive gears		★	★	★	★			
6. Optical Section	Copy lamp harness (DHAI-1406FCZZ)					▲			
	Mirrors/Lens/Reflector		○	○	○	○	○		
	Mirror position sensor (MHPS, MORS)		○	○	○	○			
	Mirror base drive wire (PWIR-0111FCZZ)/pulley (NPLYZ0127FCZZ)		×	×	×	×			
	Mirror base rail and mirror base holder		★	★	★	★			
	AE sensor		○	○	○	○			
SF-7350 only	Lens position sensor		○	○	○	○			
	Lens drive wire (PWIR-0112FCZZ)/pulley (NPLYZ0153FCZZ)		×	×	×	×			
	Lens drive gear (NGERH0503FCZZ)		×	×	×	×			
7. Copy Quality			Δ	Δ	Δ	Δ	×		
8. Others	Ozone filter (PFILZ0118FCZZ)					▲			
	Waste toner collect bottle	▲	▲	▲	▲	▲	×		
	Gears and bearings		★	★	★	★			
	Timing belt (belt A)(NBLTH0086FCZZ)		×	×	×	×(▲)			
	Table glass/document cover	○	○	○	○	○	○		

[14] SELF-DIAGNOSIS AND TEST FUNCTIONS

1. Test command functions

Test functions are used to clarify and pinpoint malfunctions in accordance with the status codes and to manipulate operations in the machine by entering an appropriate test command. The status code can be checked, changed, or canceled by the test command function. In addition, various check-out functions may be performed.

(1) Actuation of the test command functions

1) Depress CLEAR, ZERO, ZERO, and CLEAR keys. All of the indicators (except copy ratio indicator, automatic exposure copy density indicator) on the operation panel will go out, and the machine will be ready to accept test commands.

   If you do not complete the entering of CLEAR, ZERO, ZERO, CLEAR keys with in 5 seconds, the copier will not go into the test mode. You will have to perform the command entry again.

   If a key entry was made while the machine is running or copying, the message in the multiple copy number display window goes out to indicate that the machine is ready to accept a test command.

   If it was done while the machine is running, it goes into the test command mode after the drum cleaning cycle has been completed.

   If done while the machine is copying, the test command mode is established after the copy operation has been completed.

2) Program the test command by entering the two-digit command code. Although any number of digits can be entered through the keyboard, only the last two digits are effective.

3) The test command is executed by pressing the PSW.

4) To change the command, press the CLEAR key. The test program under execution is terminates and all of the front panel indicators will go out. The control returns to Step (2) and is ready for a new entry.

5) To terminate the test mode, press the clear key twice for all test commands except the following.

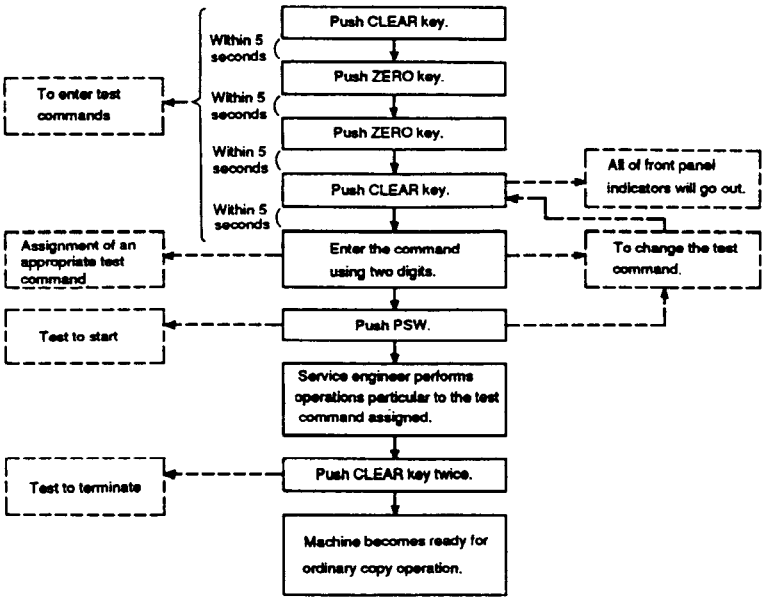
   The copier will return to the operational mode.

   NOTE:

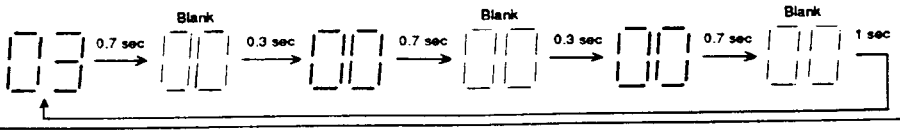
   - Test programs, 21 or 24.
     1. Power switch off, except for the case that the power is turned off with a misfeed existing in the test command mode 21 or 24, toner in empty condition, waste toner bottle fully contained, and with the status P blinking.
     2. Press CLEAR, ZERO, ZERO, CLEAR, CLEAR CLEAR keys.
   - Test commands 13 and 14.

     As the test commands, 13 and 14, are used to clear the contents of the self-diagnosis (U1, H3, H4) memory stored in the LSI, the program will be cleared automatically upon the completion of the test program 13 or 14.

     After this, the machine will go to the ordinary operational mode.
   - Test mode is automatically canceled after the execution of the test command 90.


Push CLEAR key.
Within 5 seconds
Push ZERO key.
Within 5 seconds
Push ZERO key.
Within 5 seconds
Push CLEAR key.
Within 5 seconds
To enter test commands
All of front panel indicators will go out.
Assignment of an appropriate test command
Enter the command using two digits.
To change the test command.
Test to start
Push PSW.
Service engineer performs operations particular to the test command assigned.
Test to terminate
Push CLEAR key twice.
Machine becomes ready for ordinary copy operation.

Types of test commands and their functions

Test command	Function
01	The mirror base will perform forward and reverse movements automatically, to check the mirror base action. At the same time, action of the sensors (MHPS, MORS) can also be checked. With the SF-7350 the mirror base may be moved forward in the speed of desired magnification ratio in this test command, when the magnification ratio is chosen before depressing the PSW. • ON when the mirror home position sensor (MHPS) is active. • ON when the mirror overrun sensor (MORS) is active.
02	The mirror base can be moved manually to check activation of the sensor (MHPS, MORS) on the display. The procedure is identical to the test command 1.
03	On/off action of sensor switches (PPD, PSD, POD, PID) can be checked on the display. The indicator turns ON when the respective switch is active. • PPD (Paper pass detector) • PSD (Paper separation detector) • POD (Paper exit detector) • PID (Manual feed paper entry detector)
04	On/off action of the full waste toner box sensor (TFD) and cassette detector can be checked on the display. The indicator turns ON when the respective switch is active. • CD (Cassette detector) • TFD (Toner full detector)
05	All indicators on the operation panel are turned on for a period of 5 seconds to check for a lamp failure or a related circuit.
06	The heater lamp is turned on and off five times for a period of 0.5 second. Heater lamp turned on for 0.5 second → Heater lamp turned off for 0.5 second Used to check the heater lamp drive circuit. If the heater lamp flashes during the above cycle with the status "H2" or "H4" on display, the failure is in the LSI input line, not the output lines. (Probably thermistor or LSI failure). If the lamps stay ON or OFF continuously, there may be a failure in the triac, heater lamp, or the LSI output lines.
07	The copy lamp is turned on for 5 seconds. If the exposure mode select switch is depressed before pressing the PSW, the copy lamp activates in the automatic exposure mode. Otherwise, the copy lamp activates in the manual exposure mode. (Copy lamp intensity can be adjusted using the manual copy density adjustment procedure). The voltage of the CLC PWB can be checked while the copy lamp is active.
08	Developing bias is turned on for 30 seconds. The bias voltage and main PWB line signal checks may be made with this test command.
09	MHVG is turned on for 30 seconds. This test command allows performance of the current adjustment for the MHVG, main PWB signal checks, or proper functioning of the MHVG.
10	THVG is turned on for 30 seconds. This test command allows checking of the main PWB voltage or proper functioning of the THVG.
12	Blank lamp and discharge lamp turn on for 30 seconds. In the case of the SF-7350, selecting the magnification ratio with the magnification select key before the PSW is pressed activates the SL1 (side lamp 1) at the same time as the above lamps in the x0.80 (x0.75) mode or the SL1 and SL2 (side lamp 2) in the x0.70 (x0.64). Note that the blank lamp consists of the void lamp and side lamp, and that the SF-7300 does not incorporate the side lamp.
13	Used to cancel the status code U1.
14	Used to cancel the status code H3.
16	Used to check the maintenance preset counter contents. Set to 30,000 and its contents will be displayed on the multi-copy number display in three cycles to indicate a whole number, two digits at a time. 
18	Used to check the machine's total copy count. Will be displayed in the same manner as (16) above.
19	Actual copy count in the maintenance counter is displayed. Will be displayed in the same manner as (16) above.
20	Used to reset the maintenance counter to zero after the completion of machine maintenance. This test command must be executed after completion of machine maintenance.

<table>
<tr><th>Test command</th><th>Function</th></tr>
<tr><td>21</td><td>1. Used to check the warm-up time.
2. Used to perform the aging test according to the entered copy number.
When the test command is entered, the machine goes into the ordinary machine operating mode, and the warmup time starts to count from 0, and increases every 1 second. The warmup time is indicated on the multicopy number display.
When the RPL turns on, warmup counting is stopped and the display remains as it is. Depression of the CLEAR key, entry of a copy number, and depression of the PSW begins the aging operation until the entered copy number is reached.
The paper misfeed detect function stays active.</td></tr>
<tr><td>24</td><td>Permits machine operational checks by omitting the warmup time.
RPL lights up immediately after the execution of the test command. It is possible to immediately proceed to check machine operations.</td></tr>
<tr><td>25</td><td>1. Used to adjust the toner sensor level.
2. Used to check operation of all rotating parts.
With this test command, the main motor and the developing bias turn on for 3 minutes. If the toner sensor output level is too low, the TPL lamp lights.

TPL
Developer color indication
<table><tr><th></th><th>Blk</th><th>Red</th><th>Blue</th><th>Brwn</th><th>Grn</th></tr><tr><td>•</td><td>O</td><td>X</td><td>X</td><td>O</td><td>X</td></tr><tr><td>•</td><td>X</td><td>O</td><td>X</td><td>O</td><td>O</td></tr><tr><td>•</td><td>X</td><td>X</td><td>O</td><td>X</td><td>O</td></tr></table></td></tr>
<tr><td>26
(SF-7350 only)</td><td>The lens moves from normal → 100% → 80% → 70% → 124% → 100% (AB series)
The lens moves from normal → 100% → 75% → 64% → 124% → 100 (Inch series)
The lens stops for 0.5 second at each position.
Used to check lens base operation.</td></tr>
<tr><td>27
(SF-7350 only)</td><td>(AB series)
Normal → x0.80 → x0.70 → x1.24
(Inch series)
Normal → x0.75 → x0.64 → x1.24
Lens stops through the ratios continuously.
The lens stops for 0.5 second at each position.
Used to check lens base operation.</td></tr>
<tr><td>40</td><td>Displays the contents of the developer preset counter of the developer unit in use, in a similar manner as test command 16.
Similar to test command 25 for displaying of the color of the developer unit.</td></tr>
<tr><td>41</td><td>Displays the contents of the developer counter of the developer unit in use, in a similar manner as the test command 25.
Similar to test command 25 for displaying of the color of the developer unit.</td></tr>
<tr><td>42</td><td>Resets the contents of the developer counter, in a similar manner as test command 16.
This test command must be executed upon replacement of the developer.
Similar to test command 25 for displaying of the color of the developer unit.</td></tr>
<tr><td>48
(SF-7350 only)</td><td>Used to adjust the magnification ratio in the longitudinal direction of the copy.
By changing the lens home position in the normal mode, the magnification ratio in the longitudinal direction of the copy (across the front and rear frame sides) can be adjusted.
Method:
1) Place a scale across both frame sides of the original table and make a copy in the normal mode to obtain the magnification ratio.
Magnification ratio = (original size — copy image size) ÷ (original size) x 100
2) Find the magnification ratio and corresponding compensation value on the table.
3) Execute test command 48.
As the ready lamp turns on, the previously stored figure (2 to 6) is displayed.</td></tr>
</table>

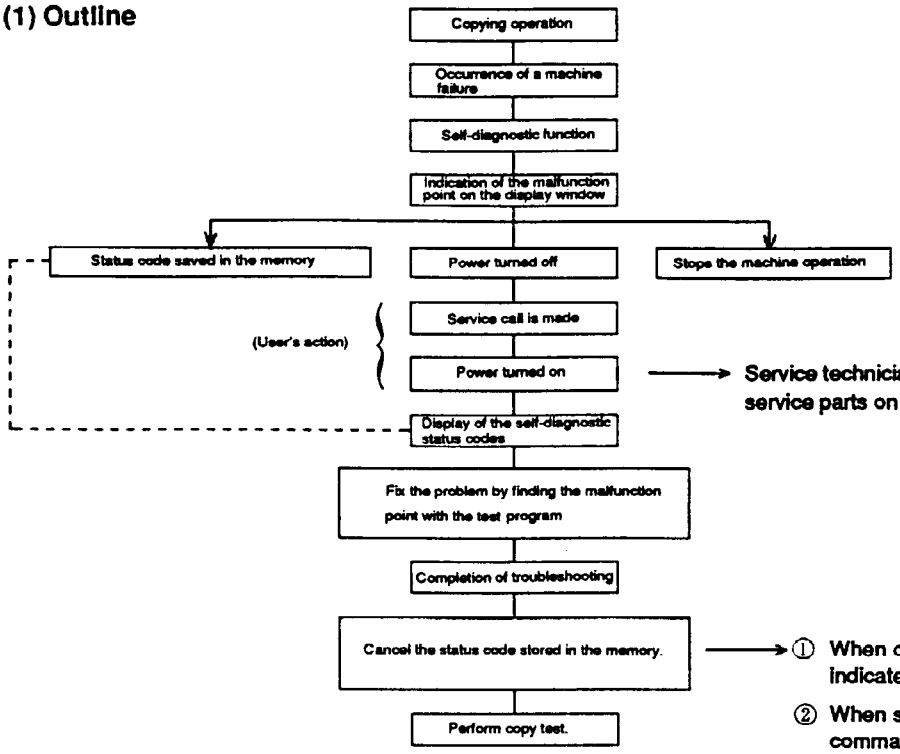
<table>
<tr><th>Test command</th><th>Function</th></tr>
<tr><td></td><td>4)
ADD the compensation value to the previously stored value and enter the new input value using the number key. If the new value is less than 2 or greater than 6 you must move the lens base slit plate, turn the machine off and on, then repeat test command 48.
When the PSW is pushed after entry of a new figure, the figure is stored in the memory and the ready lamp goes out.
<table>
<tr><th>Magnification ratio [%]</th><th>Compensation value</th><th>Magnification ratio [%]</th><th>Compensation value</th></tr>
<tr><td>.52 to .65</td><td>4</td><td>—.07 to .07</td><td>0</td></tr>
<tr><td>.37 to .51</td><td>3</td><td>—.08 to —.22</td><td>—1</td></tr>
<tr><td>.23 to .36</td><td>2</td><td>—.23 to —.36</td><td>—2</td></tr>
<tr><td>.08 to .22</td><td>1</td><td>—.37 to —.51</td><td>—3</td></tr>
<tr><td>—.07 to .07</td><td>0</td><td>—.52 to —.65</td><td>—4</td></tr>
</table>
Example
<table>
<tr><th>Magnification ratio</th><th>Compensation value</th><th>Previously stored value</th><th>Input value</th></tr>
<tr><td>+0.5</td><td>+3</td><td>2</td><td>5</td></tr>
<tr><td>—0.25</td><td>—2</td><td>6</td><td>4</td></tr>
<tr><td>—0.5</td><td>—3</td><td>3</td><td>(Move the lens base slit plate toward paper entry side)</td></tr>
<tr><td>+0.5</td><td>+3</td><td>5</td><td>(Move the lens base slit plate toward paper exit side)</td></tr>
</table></td></tr>
<tr><td>50</td><td>Used to adjust the copy lead edge image location.
When this test command is executed, the machine starts to warm up with the currently used lead edge adjustment value on display. In the case of the SF-7350, the lens base moves to the normal position. When the machine is ready for operation, set the lead edge adjustment value to "0" and push the PSW to make a copy. Measure the distance (L) across the copy lead edge image area and the lead edge of the copy paper. Now, obtain the lead edge adjustment value (PSC) with the following formula.
PSC = L x 4.35 + 10.87 (fraction must be rounded)
Enter the PSC value obtained and push the PSW. The entered figure is stored in the memory and a copy is produced.
Check on that copy that the lead edge image loss is 2.5±1mm.
To cancel the test command, push the CLEAR key (twice if during the copy operation).
With the SF-7350, the magnification ratio select key is inoperative during this test command mode.</td></tr>
<tr><td>59
(SF-7350 only)</td><td>Used to enter the lead edge adjust value for magnification ratios.
See [8]-3-G for the procedure.</td></tr>
<tr><td>72</td><td>Used to preset the maintenance indicator lamp activation counter.
Method:
1) When this test command is executed, the contents of the currently set maintenance indicator lamp activation counter and the ready lamp are displayed.
2) Enter the parameter appropriate to the maintenance counter setting using a key between 1 and 4, in reference to the table below after the activation of the ready lamp, and push the PSW. With this the number is stored in the memory and the ready lamp goes out.
<table>
<tr><th rowspan="2">Parameter</th><th rowspan="2">Maintenance lamp activation count</th><th colspan="2">Developer lamp activation count</th></tr>
<tr><th>Black</th><th>Color</th></tr>
<tr><td>1</td><td>10,000</td><td>30,000</td><td>5,000</td></tr>
<tr><td>2</td><td>15,000</td><td>30,000</td><td>5,000</td></tr>
<tr><td>3</td><td>30,000</td><td>30,000</td><td>5,000</td></tr>
<tr><td>4</td><td>not active</td><td>not active</td><td>5,000</td></tr>
</table></td></tr>
<tr><td>79</td><td>Used to assign the model and local version.
Method:
1) When this test command is executed, the currently stored model name and the local version are displayed. (See the table.)
The ready lamp turns on.
2) Enter the parameters appropriate to the model name and local version and push the PSW to store parameters in the memory. The ready lamp goes out.</td></tr>
</table>

<table>
<tr><th>Test command</th><th>Function</th></tr>
<tr><td></td><td>
<table>
<tr><th colspan="2">Model</th><th>Parameter
(Local mode number)</th><th>Version</th><th>Remark</th></tr>
<tr><td>SF-7350</td><td>Inch series</td><td>07</td><td>Export</td><td></td></tr>
<tr><td rowspan="2"></td><td rowspan="2">AB series</td><td>04</td><td>Japan</td><td rowspan="2">Japan or export version must be set for the AB series.</td></tr>
<tr><td>06</td><td>Export</td></tr>
<tr><td>SF-7300</td><td>Inch series</td><td>03</td><td>Export</td><td></td></tr>
<tr><td rowspan="2"></td><td rowspan="2">AB series</td><td>00</td><td>Japan</td><td rowspan="2">Japan or export version must be set for the AB series.</td></tr>
<tr><td>02</td><td>Export</td></tr>
</table>
</td></tr>
<tr><td>90</td><td>Used to set the drum cleaning mode. (The duration of the main motor run time after the completion of copy operation, which should normally be set to the 10-second mode.
1) If the ready lamp is active upon entering this test command, the machine is in the 60-second mode. If not active, it is in the 10-second mode.
2) Each time the paper select key is depressed, the ready lamp alternately turns on and off. If the PSW was depressed when the ready lamp is off, the mode is set to the 10-second mode.</td></tr>
<tr><td>97</td><td>Used to select whether the manual copy mode is started automatically or by pushing the PSW.
Method:
1) When this test command is executed, the currently stored manual copy mode parameter (see table below) is displayed and the ready lamp turns on.
2) After the ready lamp turns on, enter the parameter using a figure 0 or 1 for the mode to be set. Depress the PSW and the parameter is then stored in the memory and the ready lamp goes out.
<table>
<tr><th>Parameter</th><th>Manual copy mode</th></tr>
<tr><td>0</td><td>Auto start mode</td></tr>
<tr><td>1</td><td>PSW start mode</td></tr>
</table>
* Invalid when the multi-bypass stacker is installed. (Copy starts after depression of the PSW, when the multi-bypass stacker is installed.)</td></tr>
<tr><td>98</td><td>Used to set the toner motor operating frequency.
Method:
1) When this test command is executed, the contents of the currently set toner motor drive frequency parameter (see table below) is displayed and the ready lamp turns on.
2) Enter the parameter appropriate to the toner motor drive frequency using a key between 0 and 2 and push the PSW. The number is stored in the memory and the ready lamp goes out.
<table>
<tr><th>Parameter</th><th>Toner motor drive frequency</th></tr>
<tr><td>0</td><td>50Hz</td></tr>
<tr><td>1</td><td>55.5Hz</td></tr>
<tr><td>2</td><td>62.5Hz</td></tr>
</table>
↓ More toner supplied
Use this test command to change the toner supply rate (normally set to 0).</td></tr>
</table>

2. Self-diagnostic functions

When the copier malfunctions, operations are suspended immediately and a status code is indicated on the multicopy number display. Status co are represented as an alphanumeric combination of figures.

(1) Outline


Copying operation
Occurrence of a machine failure
Self-diagnostic function
Indication of the malfunction point on the display window
Status code saved in the memory
Power turned off
Stops the machine operation
(User's action)
Service call is made
Power turned on
Display of the self-diagnostic status codes
Fix the problem by finding the malfunction point with the test program
Completion of troubleshooting
Cancel the status code stored in the memory.
Perform copy test.

→ Service technician should make the service call with necessary service parts on the basis of the trouble status reported by the user.

→ ① When one of the test status codes L1, L2, L3, L5, H2, or H4 indicated, it may be cleared by turning the power off.

② When status U1 is indicated, it may be cleared by test command 13.

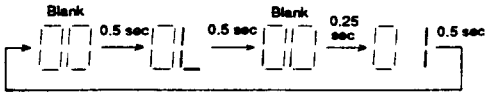
③ When status code CH or PC is indicated, it may be cleared automatically upon completion of troubleshooting, without entering a test command.

④ When status code H3 is indicated, it may be cleared by test command 14.

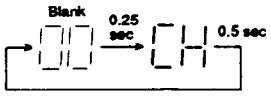
Status code

Status codes will be displayed on the copy number display window in the manner shown. Note that this differs from the conventional method.

1. L1, L2, L3, L5, H2, H3, H4, U1, U2



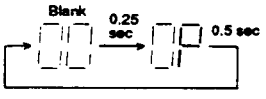
2. CH



3. PC

Always displayed as:

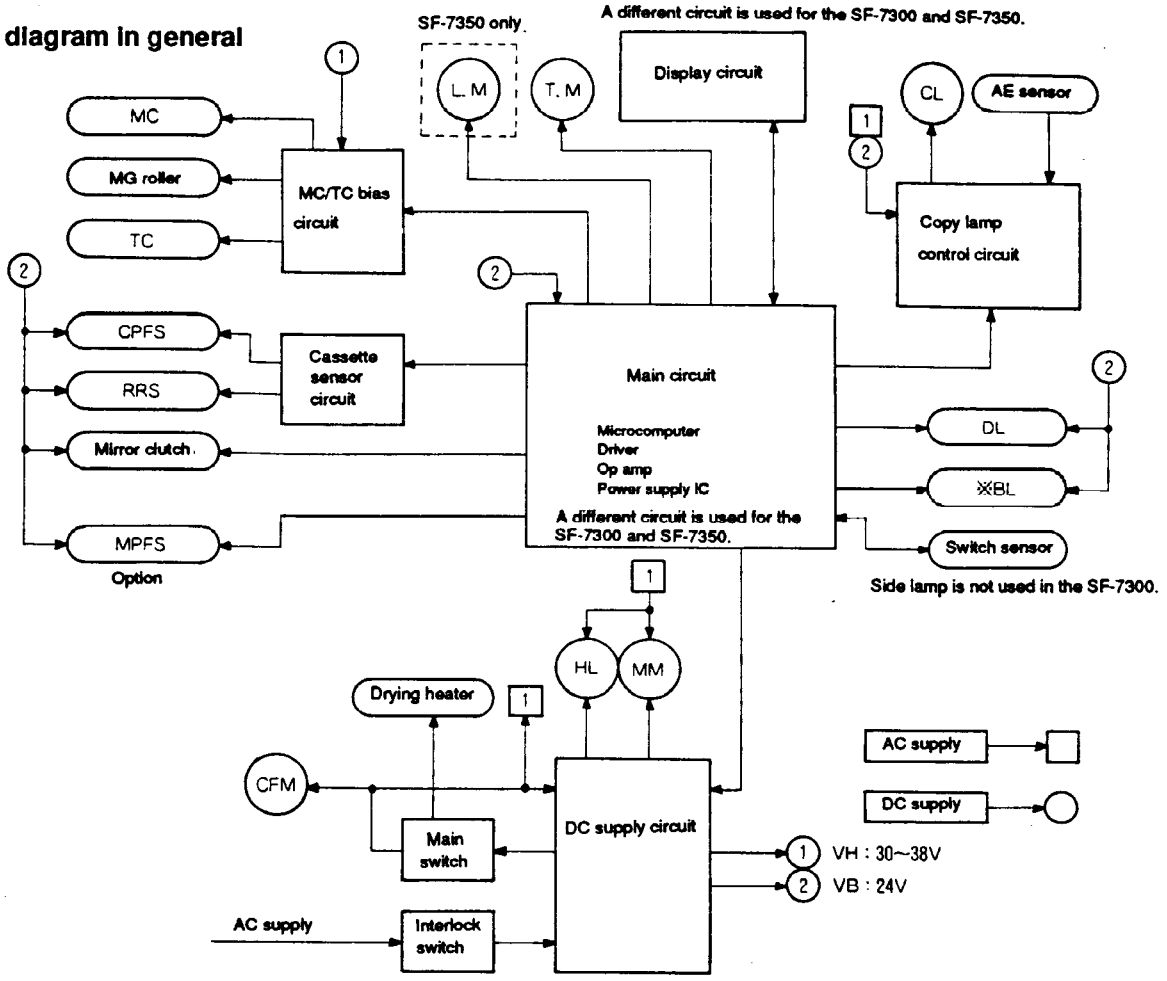
4. P



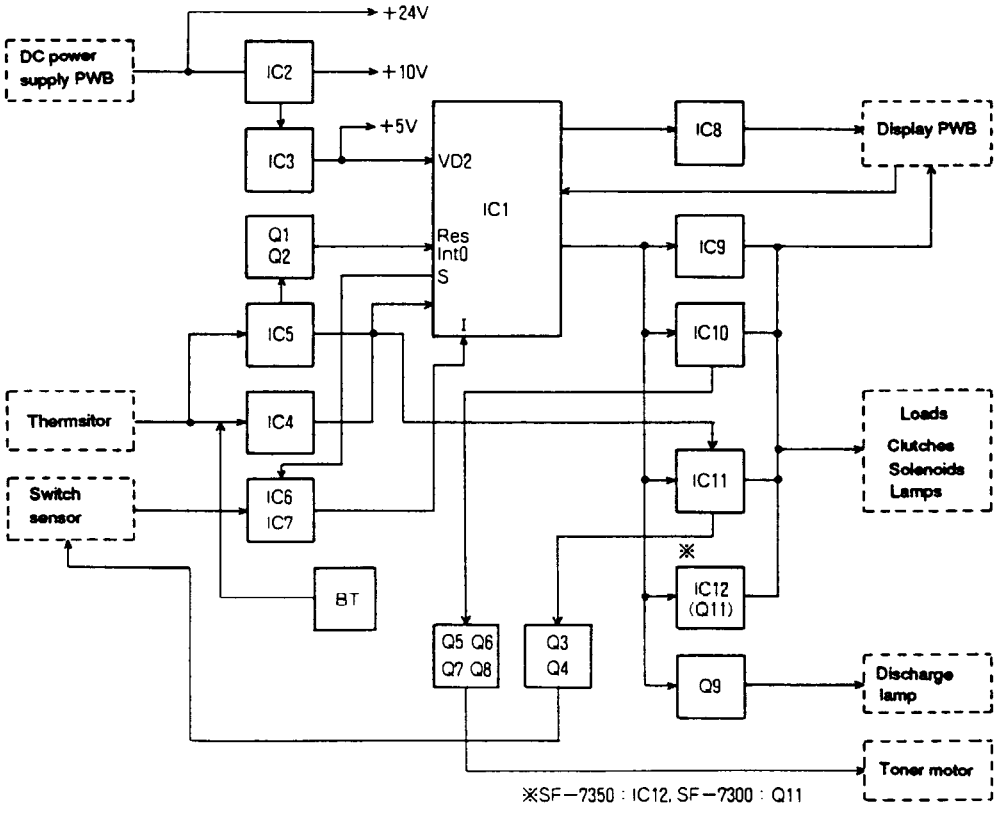
Status	Trouble symptom	Cause
L1	Mirror base feed trouble • If the mirror home position sensor (MHPS) did not turn off within one second after the start of the mirror. • If the mirror was in operation after a lapse of the time given for the magnification ratio in the copy mode.	• MHPS failure • Clutch unit (MFC) failure • Main motor failure • Bad connection between the clutch connection gear and clutch speed shift gear • MORS failure • Main PWB failure
L2	Mirror base operational trouble If the resistor roller clutch (RRC) did not turn on within 1.27 seconds after the start of the mirror in the copy mode. If the mirror overrun sensor (MORS) was on when the RRC turned on in the copy mode.	• MORS failure • MHPS failure • Main PWB failure
L3	Mirror base return trouble If the mirror home position sensor (MHPS) did not turn on within 2.1 seconds after the start of the mirror return.	• MHPS failure • Stepping motor failure • Clutch unit (MRC) failure
L5	If the lens did not reach the given position within 15 seconds after the start of the lens motor.	• LPS failure • Stepping motor failure • Lens drive wire disengagement, lens mechanism failure, or obstructed lens movement • Main PWB failure
H2	Open heat roller thermistor.	• Open thermistor • Main PWB failure
H3	Heat roller irregularly high temperature above 240 degrees centigrade.	• Heater lamp drive circuit failure (stays on) • Main PWB failure
H4	Heat roller irregularly low temperature.	• This status is issued if the specific heat roller temperature (180 degrees centigrade) was not reached within the given time after power on. • Open heater lamp • Open thermostat contacts • Heater lamp drive circuit failure (stays on) • Main PWB failure
U1	Voltage drop in the memory backup battery (below 2.3V).	
U2	Data frustration in the counter within the memory (total counter, maintenance counter, developer counter).	• (Because the memory is contained within the CPU, the status U2 would not be evoked. • When the CPU is replaced.
CH (flashes)	Developer unit not inserted in the machine or connector contact failure.	• Incomplete DV unit insertion • DV connector failure
PC	Personal counter is not inserted in the machine equipped with the personal counter.	• Personal counter not loaded • Personal counter failure
P (flashes)	If PPD (paper entry detector) did not turn on within 2.0 seconds for cassette feed or 2.6 seconds for multi-bypass stacker after the takeup solenoid has turned on in the cassette feed or multi-bypass stacker fed (paper misfeed or empty).	• Cassette paper empty • CPFS failure • MPFS failure (SF-MF11) • PDD failure
P	The cassette is not properly inserted in the machine.	• Cassette not loaded • Incomplete cassette insertion • CD failure • Main PWB failure
P2	Discharge lamp connector disengagement or all discharge lamps do not turn on.	• Discharge lamp PWB connector disengagement • Discharge lamp PWB failure • Main PWB failure

[15] OUTLINE OF ELECTRICAL SECTION

1. Block diagram in general



2. Main PWB block diagram



3. CPU signal description

Pin No.	In/Out	Signal name	Description
1	Out	MFC	Mirror feed cluch control signal, active high
2	Out	MRC	Mirror return clutch control signal, active high
3	Out	DL	Discharge lamp control signal, active high
4	Out	HL	Heater lamp
5	—	—	Pulled up to 5V.
6–9	Out	*LM0–3	Lens motor control signal
10	Out	CPFS	Cassette feed solenoid control signal, active high
11	Out	MPFS	Multi-bypass stacker solenoid control signal, active high
12	Out	RRS	Resist roller control signal, active high
13	Out	TC	Personal counter step up signal
14–17	Out	MDL0–3	Display LED control signal, active high
18	—	—	Pulled up to 5V
19	—	—	GND
20	—	—	Pulled up to 5V
21	—	—	Pulled up to 5V
22	In	Int0	Power off detect signal
23	In	Int1	MHPS off detect signal
24–27	In	I0–I3	Switch sense strobe
28, 29	Out	S0–S1	Switch sense strobe
30, 31	Out	V_{C0}, V_{C1}	Photosensor control signal
32	In	VD2	5V supply
33	—	—	Pulled up to 5V
34	In	WTL	Heat roller temperature detect signal, high at 180°
35	In	HTO	Open thermistor detect signal, low when open
36	In	HTH	Heat roller high temperature detect signal, low at 240°.
37–43	Out	A–G	Segment control signal
44	Out	$\overline{BCH0}$	Battery voltage check signal
45–47	In	KI0–2	Key sense signal
48	In	BCKI	Battery voltage input signal, high when battey voltage is 2.3V or less — U1 is displayed.
49	In	REST	Reset signal
50	In	VD2	5V supply
51, 52	In/Out	OSC1, 2	Clock pulse
53	—	—	GND
54, 55	Out	TM0, TM1	Toner motor control signal
56	Out	Bias	DV bias control signal, active high
57	Out	$\overline{AE}$	Manual/auto exposure mode select signal, AE mode with a high state of signal
58	Out	MHVU	Main corona control signal, active high
59	Out	THVU	Transfer corona control signal, active high
60	Out	CL	Copy lamp control signal, active high
61	Out	VL (BL)	VL SL1 SL2
62	Out	*SL1	Void/side lamp control signal H L L → VL on
63	Out	*SL2	L H L → VL, SL1 on
			L L H → VL, SL1,SL2 on
64	Out	MM	Main motor control signal, active high

* For the SF-7350 only.
The SF-7300, it is pulled up to +5V.